Find the absolute value of each complex number.

1) $|4i|$

2) $|9 + 10i|$

3) $|3 - 10i|$

4) $|6 + 3i|$

5) $|-4 - 10i|$

6) $|2 + 10i|$

7) $|-5 - 5i|$

8) $|8 + 4i|$

9) $|4 - 6i|$

10) $|8 + 8i|$

11) $|4 - 3i|$

12) $|-5 - 5i|$

13) $|-6 - 2i|$

14) $|5 + 5i|$

15) $|-10 + 5i|$

16) $|8 - 2i|$

17) $|-4 + 4i|$

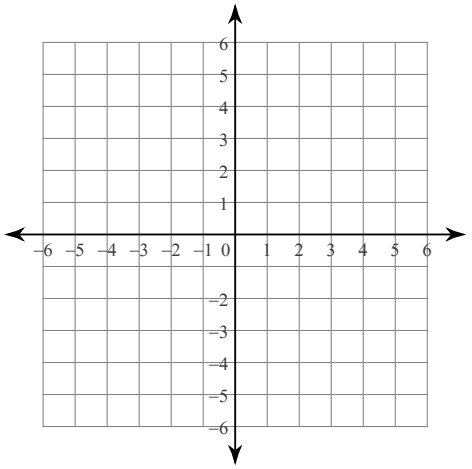
18) $|-10 - 6i|$

19) $|3 - 6i|$

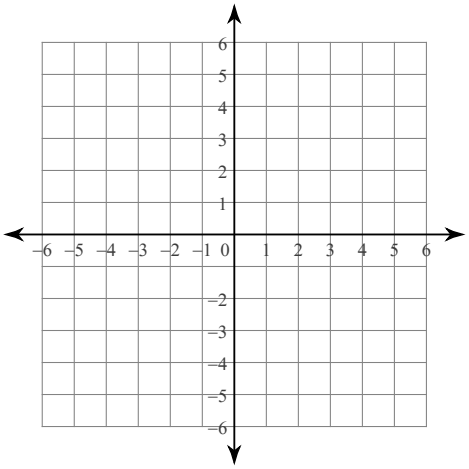
20) $|-2 - 4i|$

Graph each equation.

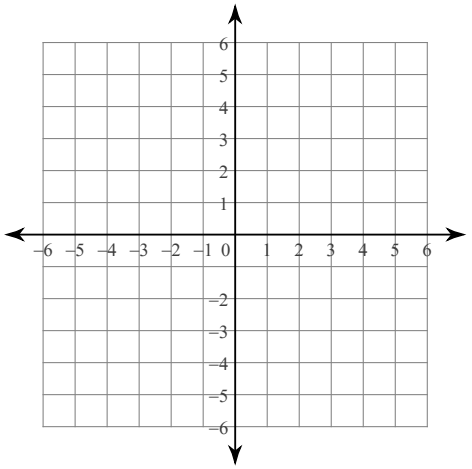
21) $y = |x| + 2$



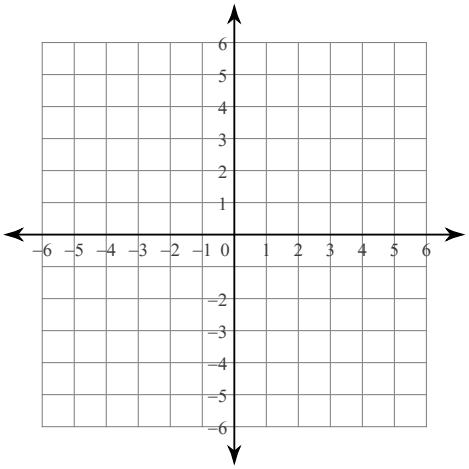
22) $y = |x + 2|$



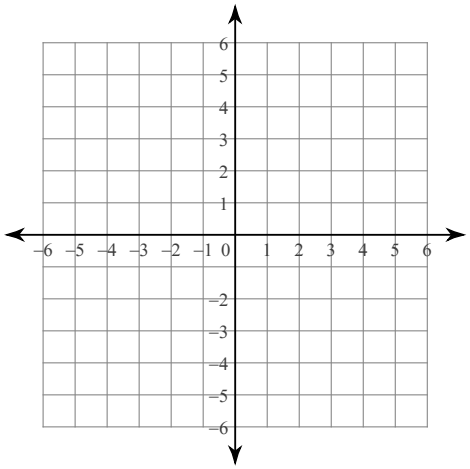
23) $y = |x| + 1$



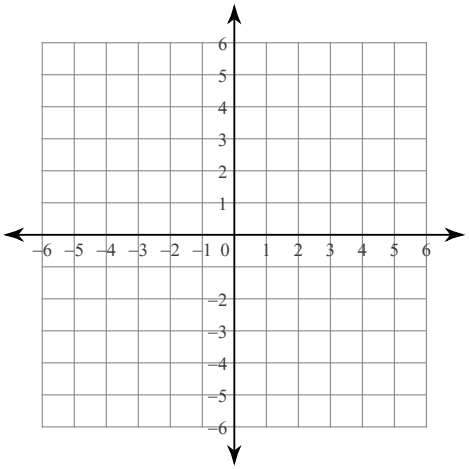
24) $y = |x + 1|$



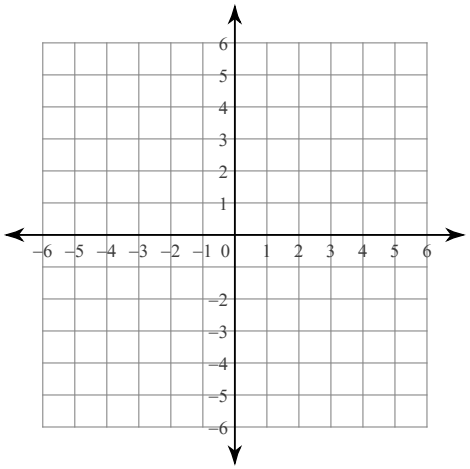
25) $y = |x + 4|$



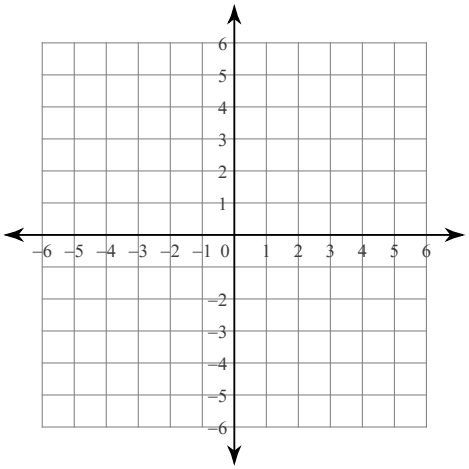
26) $y = |x| - 3$



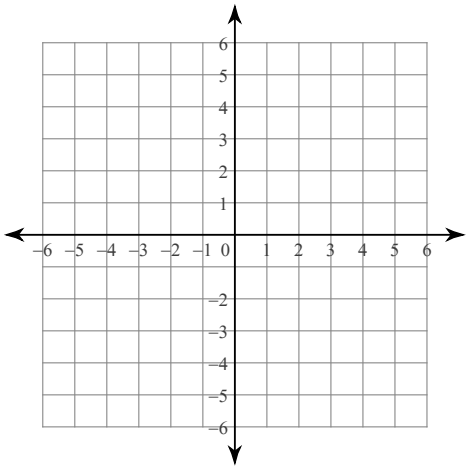
27) $y = |x - 4| + 2$



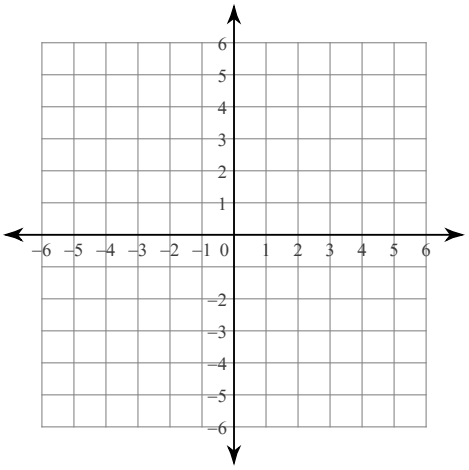
28) $y = |x - 1|$



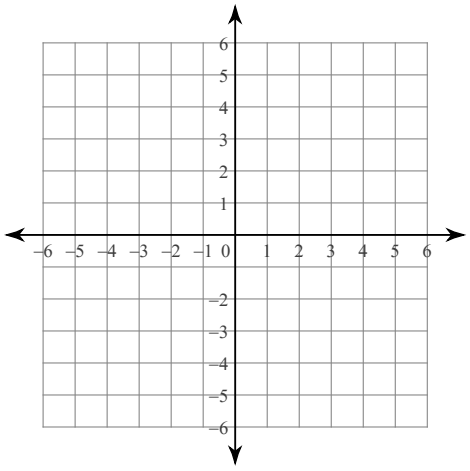
29) $y = \left|x - 1\right| - 1$



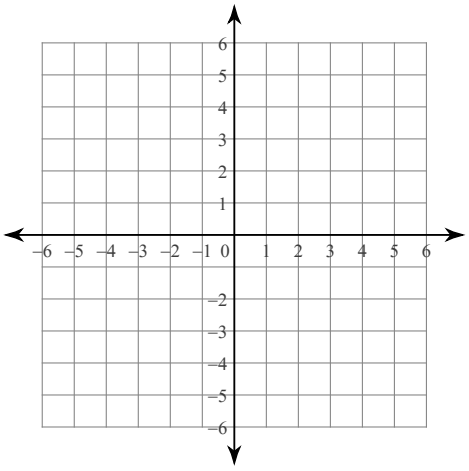
30) $y = \left|x - 1\right| + 4$



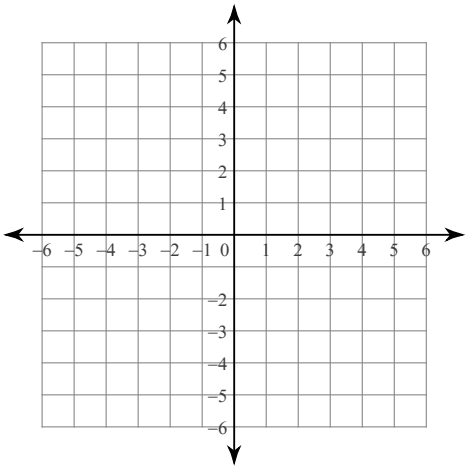
31) $y = \left|x + 4\right|$



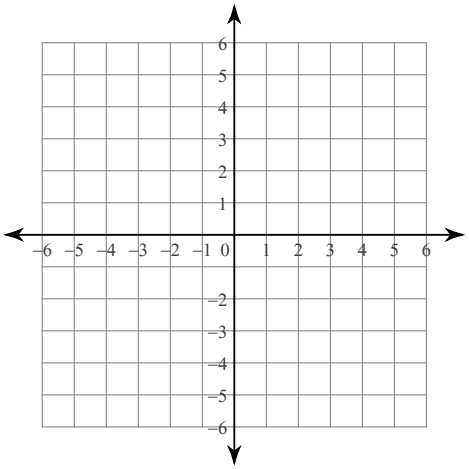
32) $y = \left|x\right| + 4$



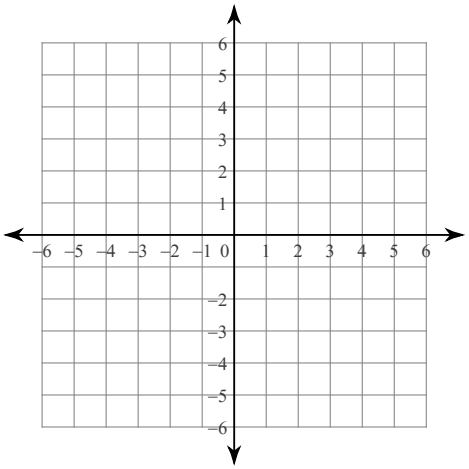
33) $y = |x + 3|$



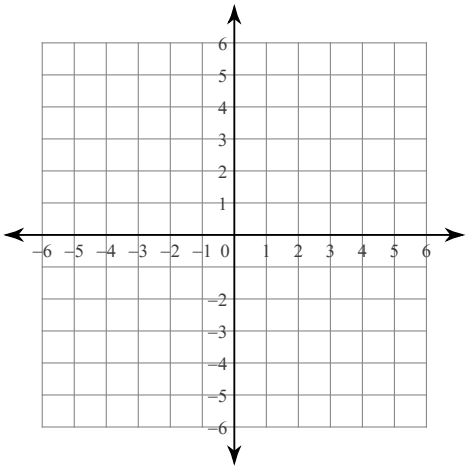
34) $y = |x| + 3$



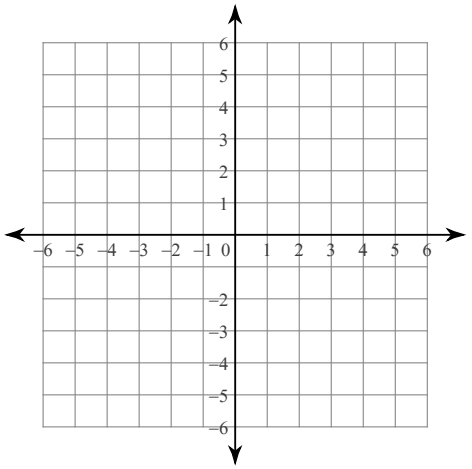
35) $y = |x + 2|$



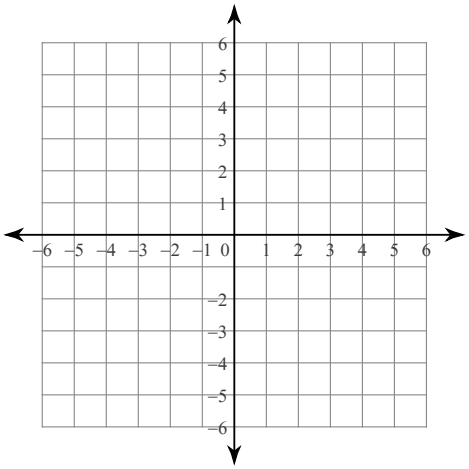
36) $y = |x| + 2$



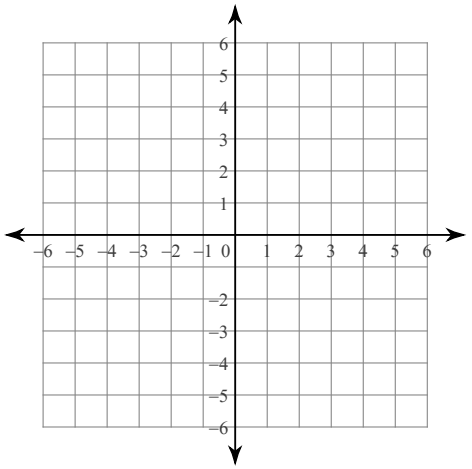
37) $y = |x + 1|$



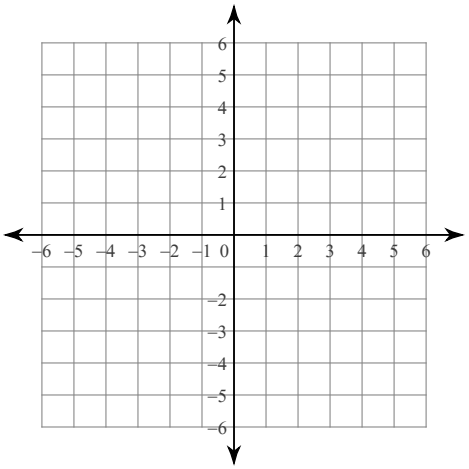
38) $y = |x| + 1$



39) $y = |x - 4|$



40) $y = |x - 1| + 1$



Solve each equation.

41) $|n - 4| = 4$

42) $|x + 10| = 14$

43) $|b - 10| = 18$

44) $|r + 5| = 1$

45) $|9x| = 72$

46) $|-6n| = 48$

47) $\left|\frac{x}{2}\right| = 5$

48) $\left|\frac{v}{6}\right| = 2$

49) $|x - 7| = 5$

50) $|-1 + a| = 5$

51) $|v + 2| = 5$

52) $|4x| = 36$

53) $|-2n| = 18$

54) $|4a| = 16$

55) $\left|\frac{k}{10}\right| = 2$

56) $\left|\frac{p}{3}\right| = 3$

57) $|x + 9| = 17$

58) $|n + 3| = 5$

59) $|9 + m| = 5$

60) $|r - 2| = 1$

61) $243^{-2x} = 3^3$

62) $64^{2n} = 8^{3n+1}$

63) $3^{3v} = 3^{-2v}$

64) $81^{-b} = 9$

65) $10^{x+3} = 100000$

66) $4^{3a} = 1$

67) $25^{-v-2} = 125$

68) $\left(\frac{1}{4}\right)^{-2x-2} = 64$

69) $\left(\frac{1}{9}\right)^{-3x} = 81$

70) $5^{-3n} = 5^{-3n}$

71) $\log_{13}(-2v - 6) = \log_{13} -v$

72) $\log(-2x + 8) = \log -3x$

73) $\log(-3a + 1) = \log(-2a + 4)$

74) $\log_{14}(4k + 8) = \log_{14}(5k - 1)$

75) $\log_{11}(2 - p) = \log_{11}(3p + 1)$

76) $\log_{19} -2n = \log_{19}(-n - 2)$

77) $\log_{20}(2x + 3) = \log_{20} 5x$

78) $\log_{15}(4m - 2) = \log_{15} 2m$

79) $\log_{18}(-2n - 1) = \log_{18}(8 - n)$

80) $\log_{12} 5r = \log_{12} -3r$

81) $\log_4 8 + \log_4 (x^2 - 10) = \log_4 48$

82) $\log_6 (x^2 - 1) + \log_6 4 = 1$

83) $\log_9 x - \log_9 (x - 2) = 1$

84) $\log_6 4 - \log_6 -x = 2$

85) $\log_8 (x + 7) - \log_8 2 = 1$

86) $\log_6 -2x - \log_6 8 = 2$

87) $\log_3 (x^2 + 8) - \log_3 8 = 5$

88) $\log_8 5x - \log_8 10 = \log_8 49$

89) $\log_3 5x - \log_3 7 = 2$

90) $\log_5 2x^2 - \log_5 10 = 1$

91) $18 = 6(-6x + 3)$

92) $28 = 4(5 + x)$

93) $-4(k - 7) = 52$

94) $-24 = 4(a - 6) - 2a$

95) $-2 = -2(p - 7)$

96) $5(-7 - x) = -70$

97) $-10 = 2(-7 + n)$

98) $7m - 2(6m + 2) = -19$

99) $-8x + 7(5x + 1) = 7$

100) $2 = 2(2r - 5)$

101) $349 = \left(\frac{b}{2}\right)^{\frac{3}{2}} + 6$

102) $320 = 5n^{\frac{3}{2}}$

103) $-7 + x^{\frac{7}{6}} = 121$

104) $5(5v)^{\frac{5}{3}} = 15625$

105) $5n^{\frac{3}{2}} = 5000$

106) $(7a)^{\frac{3}{2}} = 343$

107) $-5k^{-\frac{3}{2}} - 7 = -\frac{453}{64}$

108) $89 = 8 + 3x^{\frac{3}{4}}$

109) $(x + 6)^{-\frac{3}{2}} = \frac{1}{8}$

110) $(125n)^{\frac{4}{3}} = 625$

111) $9^{2b} = \frac{1}{81}$

112) $32^{-v} = 16^{-v}$

113) $3^{3-3x} = 3^5$

114) $3^{n-1} = 9$

115) $4^{-2a} = 1$

116) $2^{3k} = 8$

117) $\left(\frac{1}{64}\right)^{2x+3} = 16^{2x}$

118) $625^{1-3x} = 25$

119) $\left(\frac{1}{4}\right)^{n} = \left(\frac{1}{64}\right)^{-n}$

120) $4^{-2n} = 16^{-n+2}$

121) $\log_5 (-k-1) = \log_5 29$

122) $\log_2 (-3p+5) = \log_2 (4-p)$

123) $\log_{18} -5x = \log_{18} (4x+9)$

124) $\log_9 (4n-1) = \log_9 2n$

125) $\ln (r+3) = \ln -2r$

126) $\log_{20} (-5x-6) = \log_{20} (-3x-8)$

127) $\log (4n-3) = \log n$

128) $\log_6 (2m-1) = \log_6 (-m+2)$

129) $\log_5 (-3v-3) = \log_5 30$

130) $\log_7 (-4b+2) = \log_7 (5-b)$

131) $\ln 10 - \ln 4x = 4$

132) $\log_5 3 - \log_5 (x+7) = 2$

133) $\log_2 x - \log_2 (x-1) = 4$

134) $\log_5 9 + \log_5 -5x = \log_5 23$

135) $\log_7 6 - \log_7 (x-1) = 2$

136) $\log_2 (x-5) - \log_2 10 = 4$

137) $\log_7 4x - \log_7 4 = \log_7 67$

138) $\log_4 2x^2 - \log_4 8 = 3$

139) $\log_9 2x^2 + \log_9 2 = 3$

140) $\ln 5x^2 - \ln 5 = 4$

141) $18 = m^{\frac{2}{3}} - 7$

142) $-5 + 2n^{\frac{3}{2}} = 123$

143) $-1 + r^{\frac{4}{3}} = 255$

144) $4(x-1)^{\frac{1}{6}} = 8$

145) $(5n-4)^{-\frac{3}{2}} = \frac{1}{729}$

146) $7 = -9 + (b-5)^{\frac{2}{3}}$

147) $27 = (x+28)^{\frac{3}{4}}$

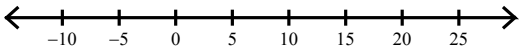
148) $(32v)^{\frac{1}{6}} = 2$

149) $-x^{\frac{3}{2}} - 6 = -518$

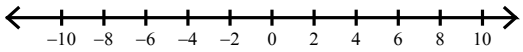
150) $1024 = 2(a-24)^{\frac{3}{2}}$

Solve each inequality and graph its solution.

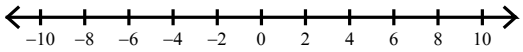
151) $|k-8| > 15$



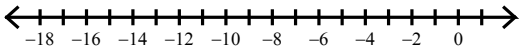
152) $|p+1| > 7$



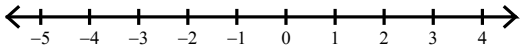
153) $|-2n| \geq 10$



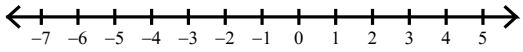
154) $|x+8| \geq 5$



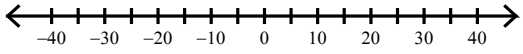
155) $|-9m| > 9$



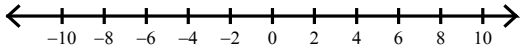
156) $|-3r| \leq 12$



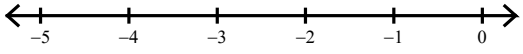
157) $\left|\frac{x}{10}\right| < 4$



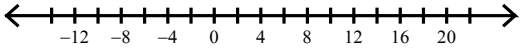
158) $\left|\frac{n}{3}\right| > 2$



159) $|3+b| \leq 1$

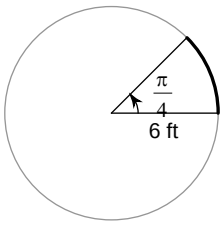


160) $|v-4| > 14$

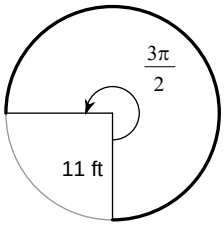


Find the length of each arc.

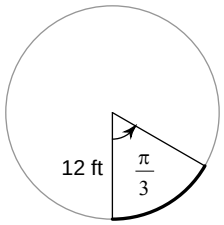
161)



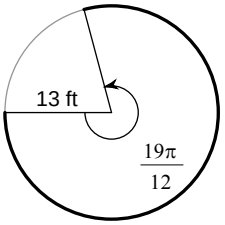
162)



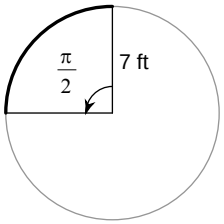
163)



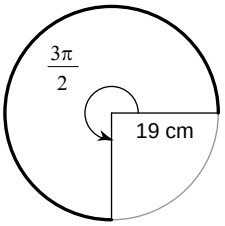
164)



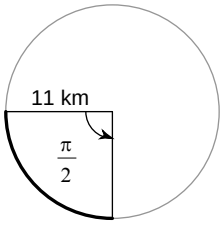
165)



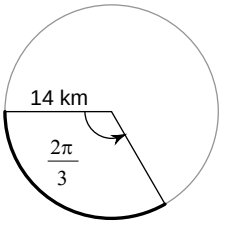
166)



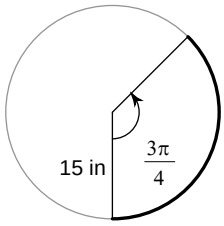
167)



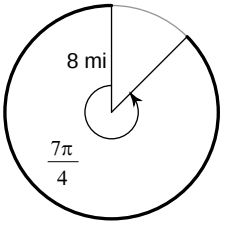
168)



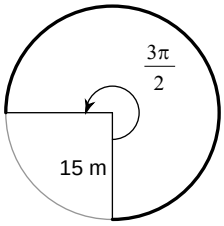
169)



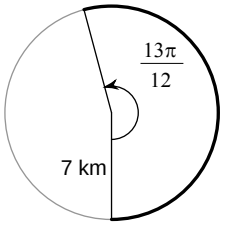
170)



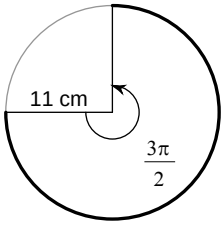
171)



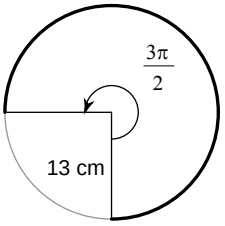
172)



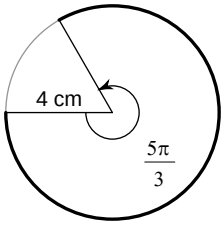
173)



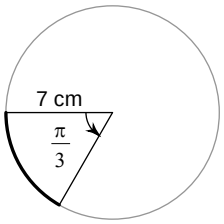
174)



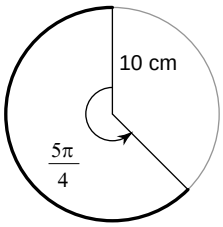
175)



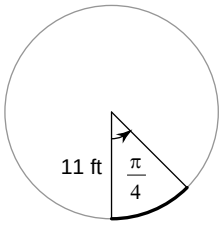
176)



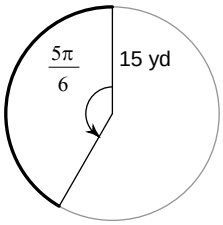
177)



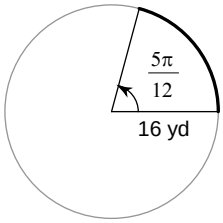
178)



179)



180)



Find a positive and a negative coterminal angle for each given angle.

181) 195°

182) 498°

183) –235°

184) –600°

185) 126°

186) –280°

187) –588°

188) –320°

189) 300°

190) 120°

191) 180°

192) –670°

193) 430°

194) –140°

195) –115°

196) 38°

197) 155°

198) –155°

199) 386°

200) –560°

201) –208°

202) –80°

203) –220°

204) 540°

205) –260°

206) 60°

207) 15°

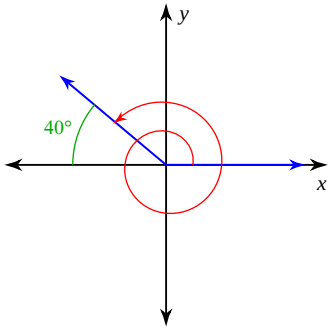
208) 195°

209) 135°

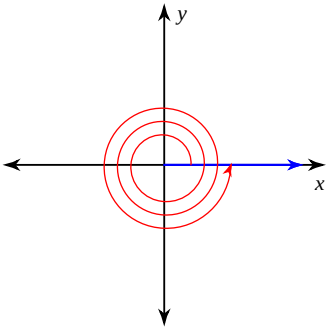
210) –90°

Find the measure of each angle.

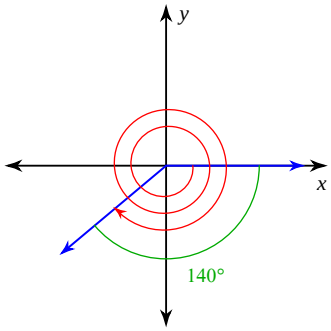
211)



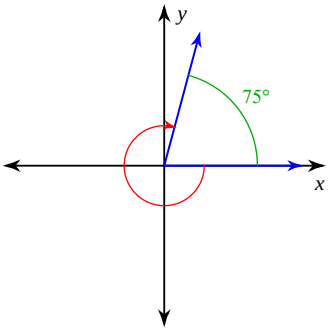
212)



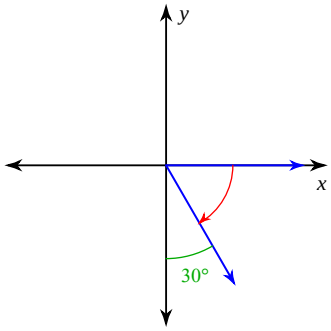
213)



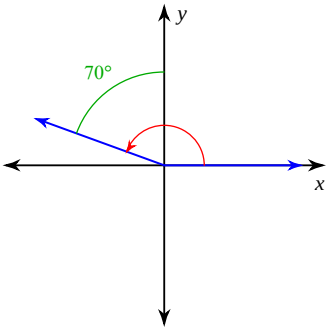
214)



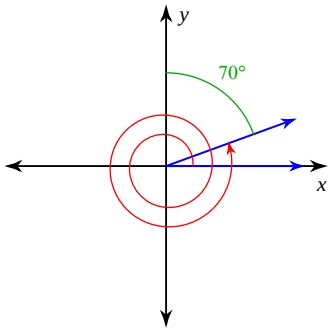
215)



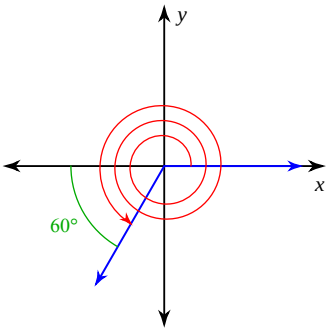
216)



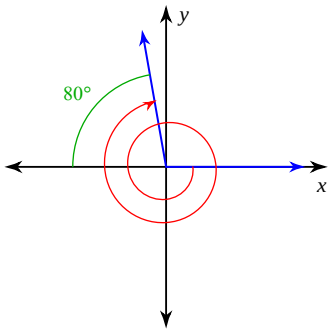
217)



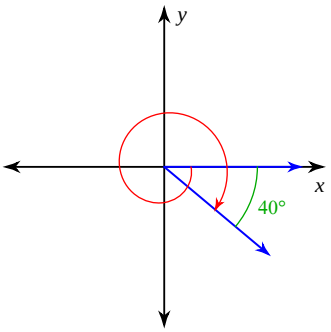
218)



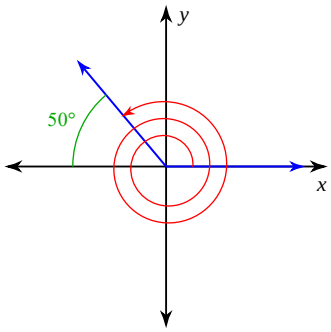
219)



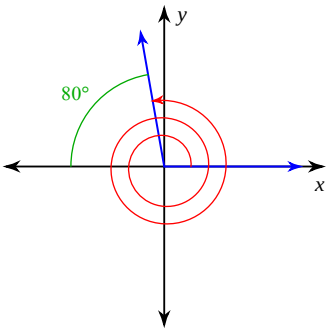
220)



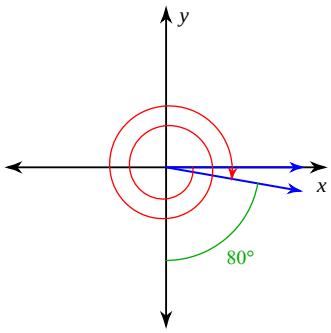
221)



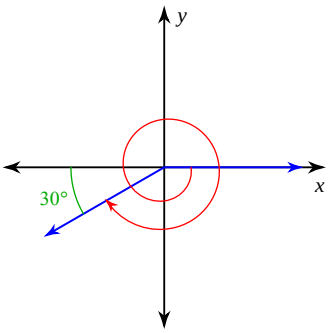
222)



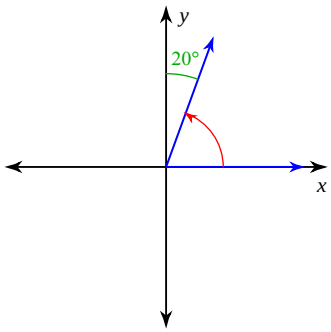
223)



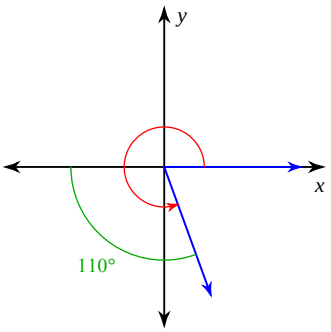
224)



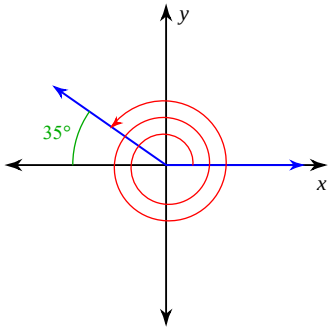
225)



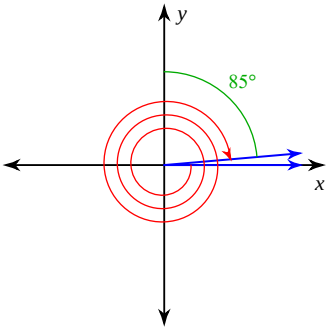
226)



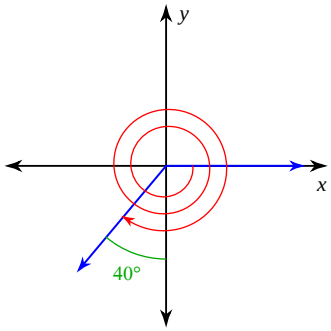
227)



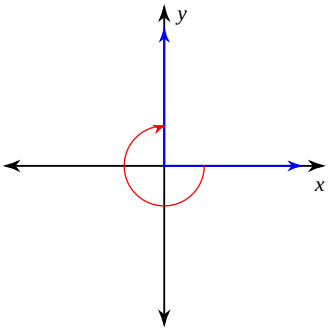
228)



229)



230)



State the quadrant in which the terminal side of each angle lies.

231) 650°

232) 240°

233) –538°

234) 124°

235) –281°

236) 380°

237) –400°

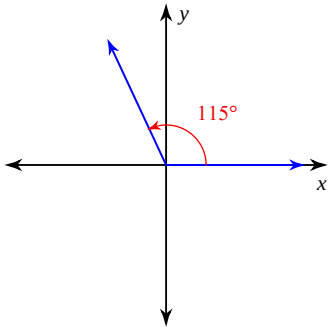
238) 640°

239) –140°

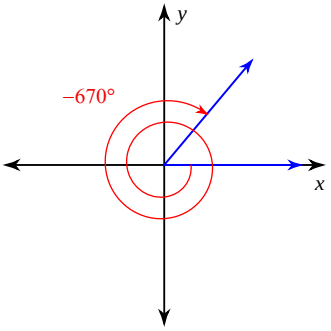
240) 519°

Find the reference angle.

241)



242)



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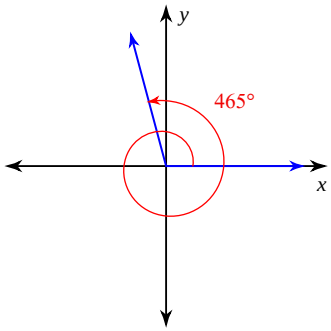
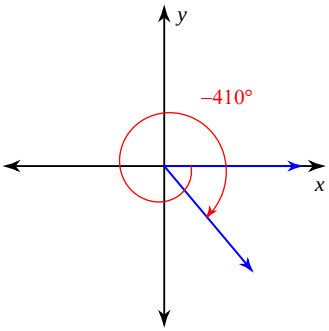


244)



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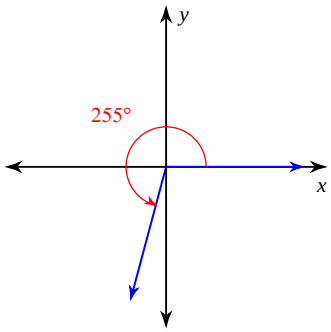
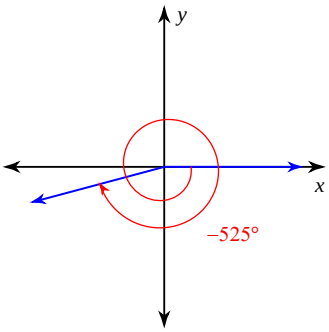
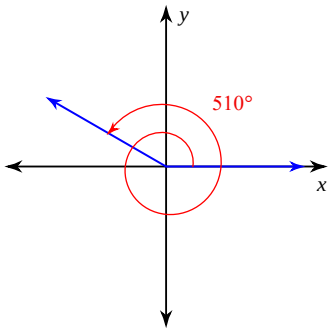


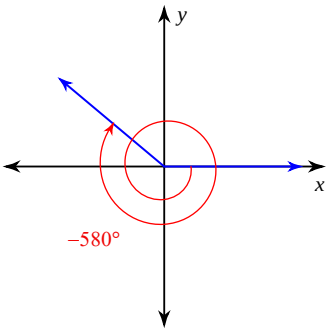
246)



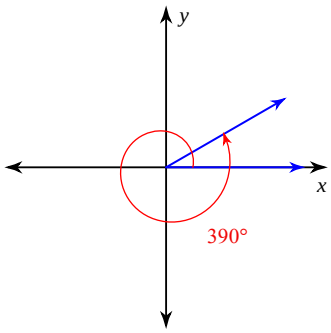
247)



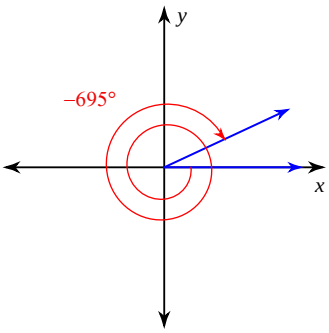
248)



249)

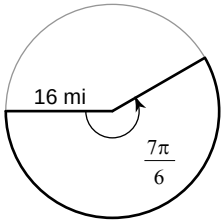


250)

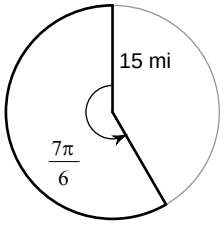


Find the area of each sector.

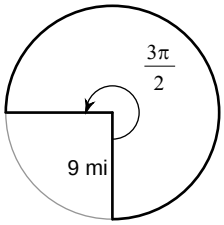
251)



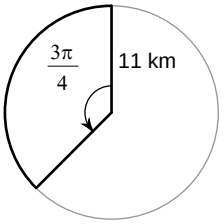
252)



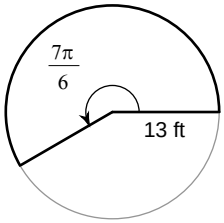
253)



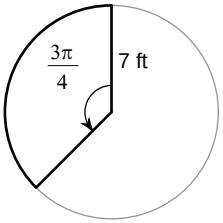
254)



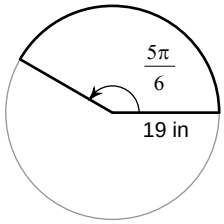
255)



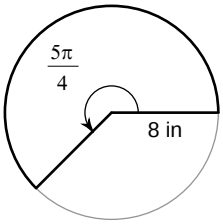
256)



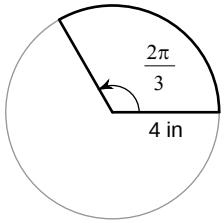
257)



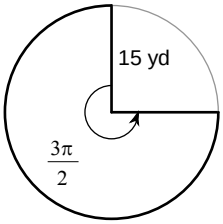
258)



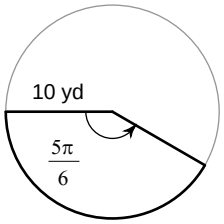
259)



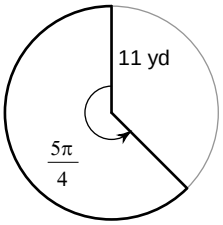
260)



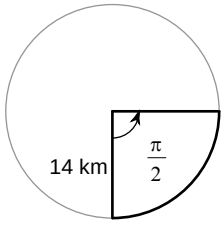
261)



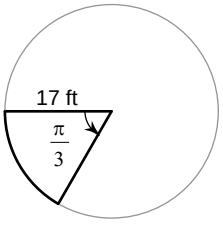
262)



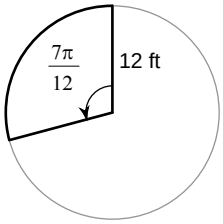
263)



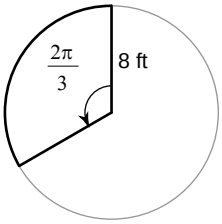
264)



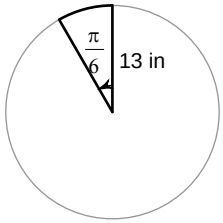
265)



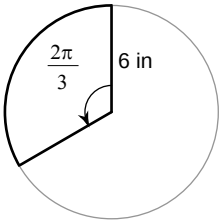
266)



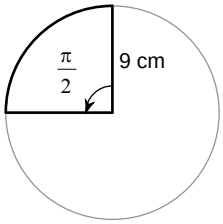
267)



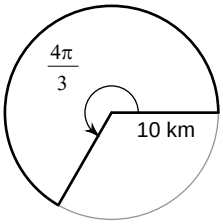
268)



269)

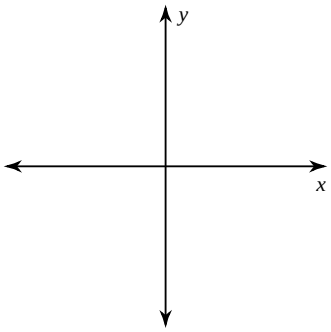


270)

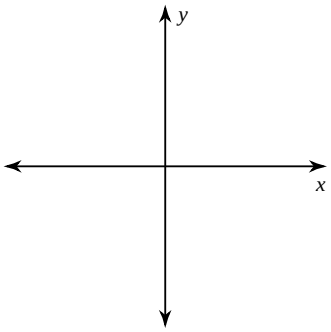


Draw an angle with the given measure in standard position.

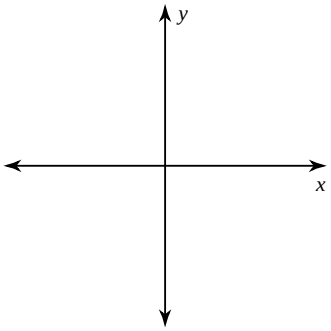
271) 290°



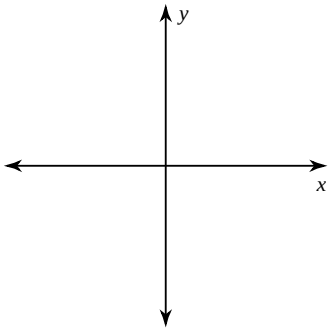
272) −575°



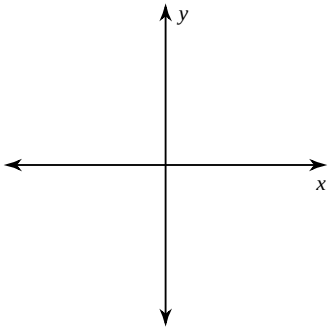
273) −495°



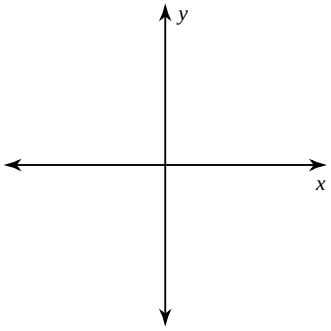
274) 370°



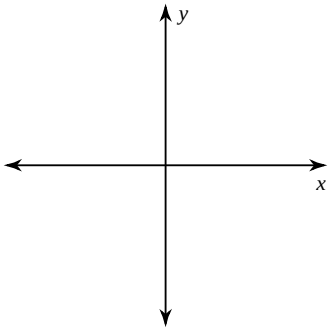
275) 475°



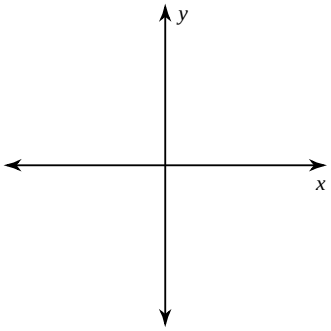
276) –420°



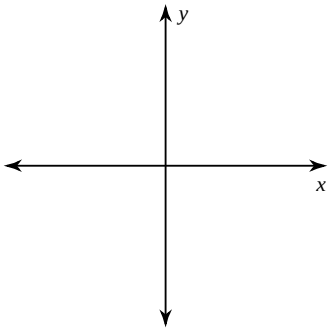
277) 530°



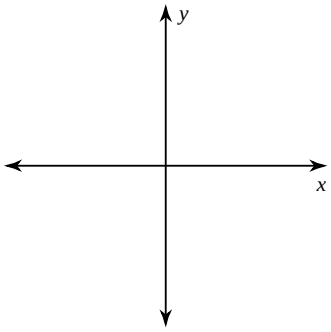
278) –340°



279) 610°

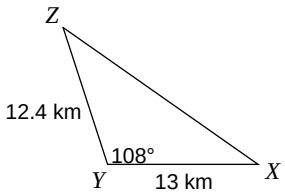


280) 115°

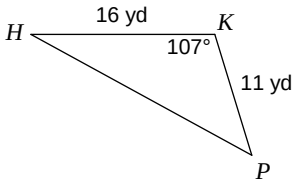


Find the area of each triangle to the nearest tenth.

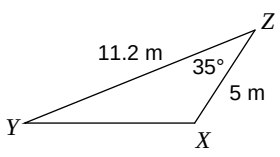
281)



282)



283)



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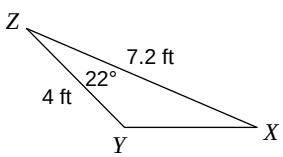

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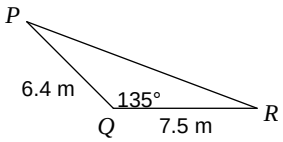

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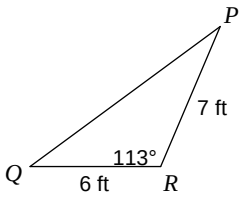

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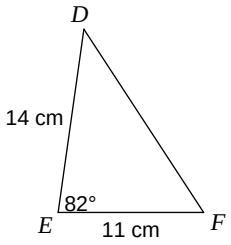

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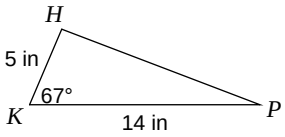

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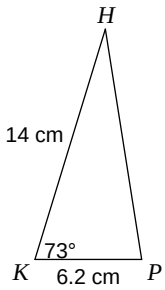

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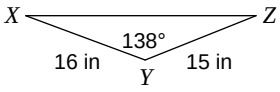

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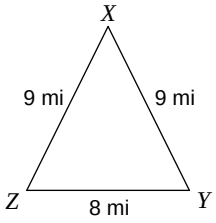

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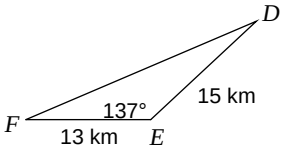

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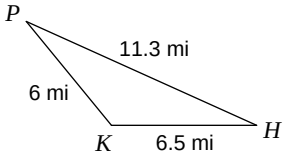

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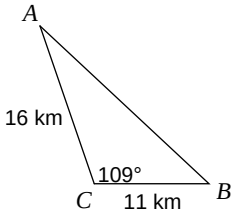

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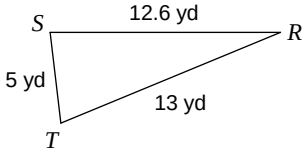

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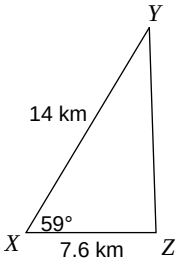

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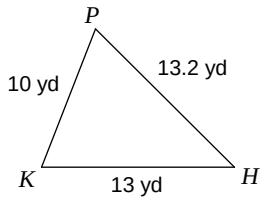

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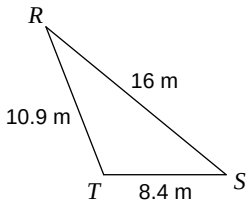

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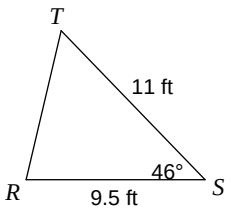

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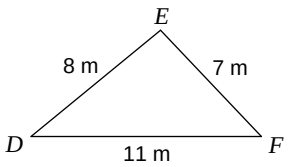

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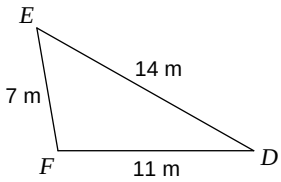

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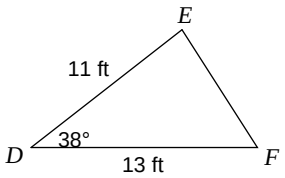

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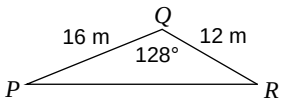

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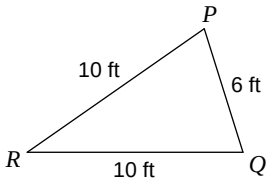

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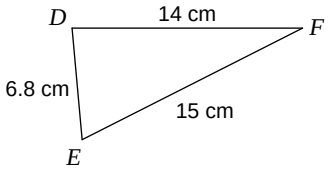

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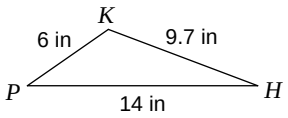

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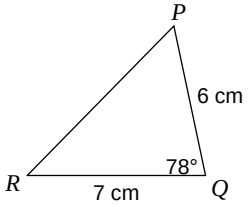

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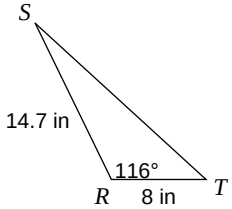

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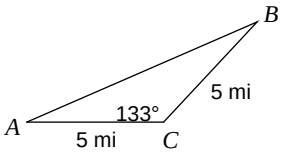

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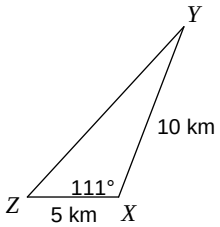

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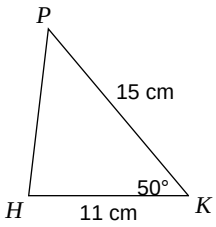

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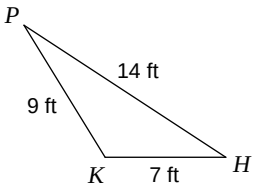

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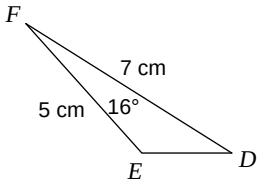

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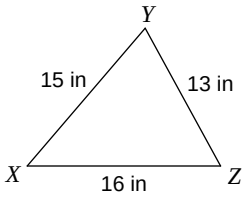

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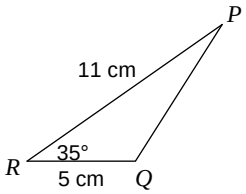

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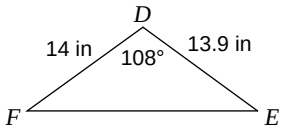

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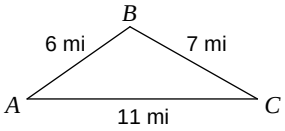

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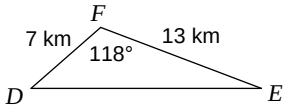

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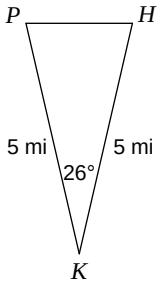

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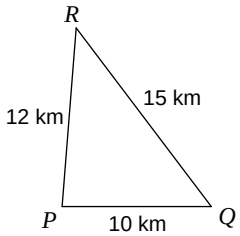

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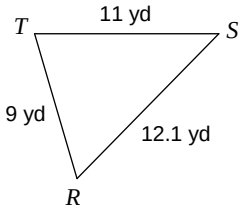

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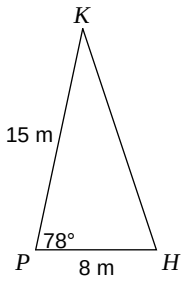

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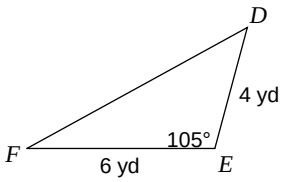

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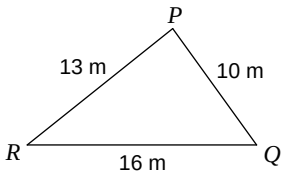

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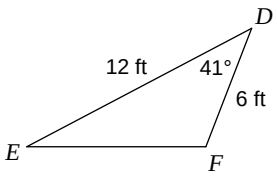

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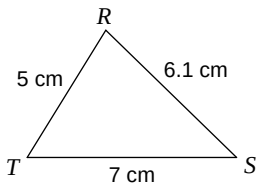

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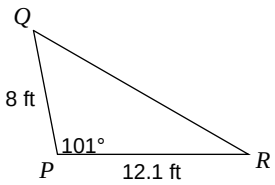

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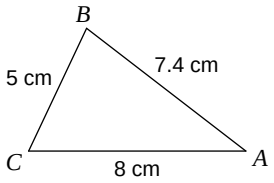

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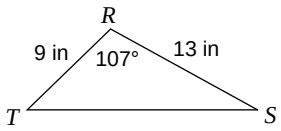

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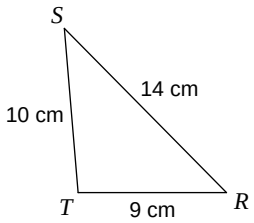

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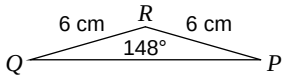

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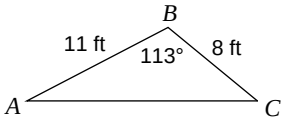

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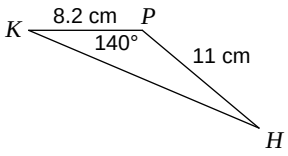

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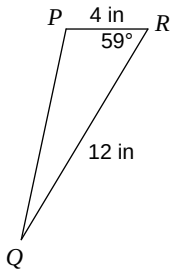

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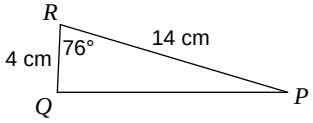
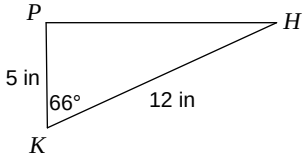
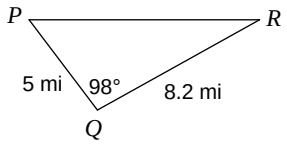


336)



337)



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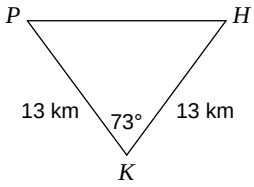

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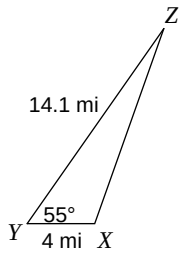

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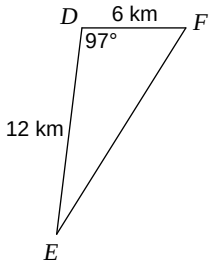

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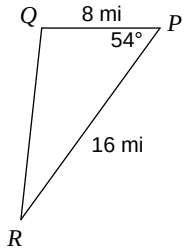

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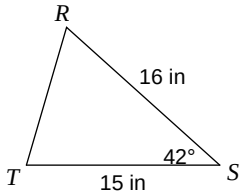

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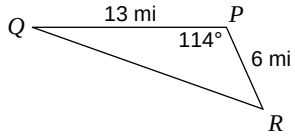

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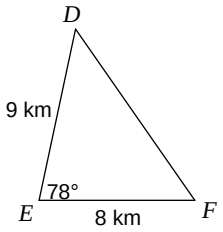

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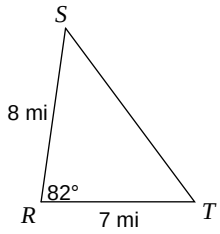

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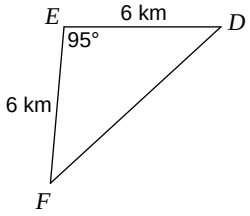

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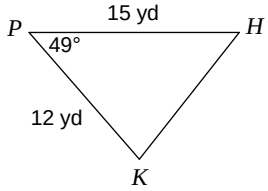

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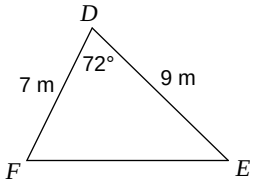

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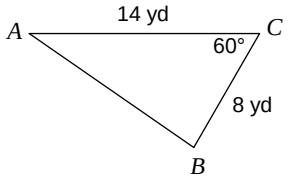

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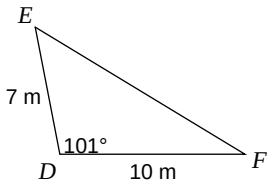

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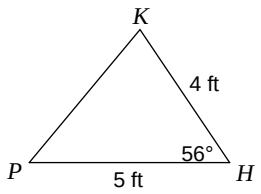

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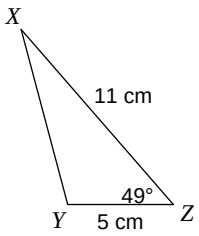

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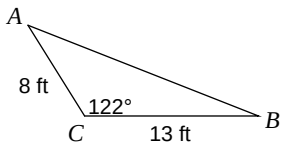

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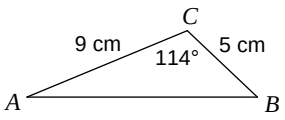

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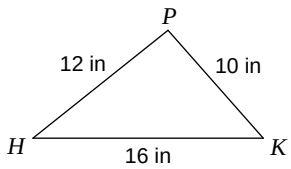

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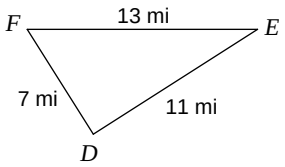

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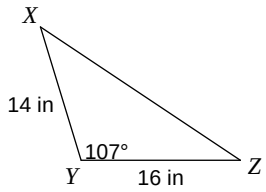

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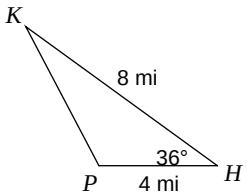

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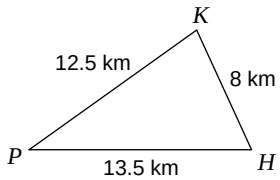

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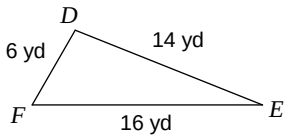


Find the missing term or terms in each arithmetic sequence.

361) ..., 37, ___, 27, ...

362) ..., 30, ___, 20, ...

363) ..., 28, ___, 88, ...

364) ..., 0, ___, 400, ...

365) ..., 2, ___, −58, ...

366) ..., −13, ___, −213, ...

367) ..., 8, ___, −12, ...

368) ..., 11, ___, 411, ...

369) ..., −34, ___, −74, ...

370) ..., 4, ___, 404, ...

371) ..., 31, ___, 49, ...

372) ..., 33, ___, 45, ...

373) ..., −23, ___, −83, ...

374) ..., 28, ___, 22, ...

375) ..., −2, ___, −402, ...

376) ..., −7, ___, 1, ...

377) ..., −8, ___, −20, ...

378) ..., −19, ___, −35, ...

379) ..., −2, ___, 10, ...

380) ..., 36, ___, 16, ...

381) ..., −38, ___, 362, ...

382) ..., 34, ___, 26, ...

383) ..., 11, ___, −389, ...

384) ..., −21, ___, −37, ...

385) ..., −31, ___, 369, ...

386) ..., 38, ___, 18, ...

387) ..., 17, ___, 23, ...

388) ..., 14, ___, 28, ...

389) ..., −1, ___, −5, ...

390) ..., −20, ___, −40, ...

Determine if the sequence is arithmetic. If it is, find the common difference, the 52nd term, and the explicit formula.

391) 16, 46, 76, 106, ...

392) 16, 116, 216, 316, ...

393) −21, −13, −5, 3, ...

394) −21, −11, −1, 9, ...

395) 23, 33, 43, 53, ...

396) 24, 34, 44, 54, ...

397) 3, 6, 11, 18, ...

398) −1, 2, 7, 14, ...

399) 1, 2, 6, 24, ...

400) 2, −2, 2, −2, ...

401) −12, −3, 6, 15, ...

402) −12, −2, 8, 18, ...

403) 33, 13, −7, −27, ...

404) 33, −167, −367, −567, ...

405) −4, −204, −404, −604, ...

406) −4, −8, −12, −16, ...

407) −4, 1, 6, 11, ...

408) −40, −47, −54, −61, ...

409) 40, 46, 52, 58, ...

410) 4, −3, −10, −17, ...

Evaluate the related series of each sequence.

411) 9, 16, 23, 30, 37, 44, 51

412) 0, 6, 12, 18, 24, 30, 36

413) 16, 23, 30, 37, 44, 51

414) 11, 15, 19, 23

415) 14, 22, 30, 38, 46, 54

416) 9, 11, 13, 15

417) 23, 33, 43, 53, 63, 73, 83

418) 2, 12, 22, 32, 42, 52, 62

419) 7, 11, 15, 19, 23, 27, 31

420) 14, 18, 22, 26, 30, 34, 38

421) −16, −23, −30, −37

422) 10, 18, 26, 34, 42, 50

423) −10, −12, −14, −16, −18, −20, −22

424) −4, −6, −8, −10

425) 17, 21, 25, 29

426) 13, 15, 17, 19, 21, 23, 25

427) −41, −50, −59, −68, −77

428) −32, −39, −46, −53, −60, −67

429) −32, −40, −48, −56, −64, −72, −80

430) −17, −27, −37, −47, −57, −67

Find each term described.

431) 2nd term in expansion of $(a - 2b)^3$

432) 5th term in expansion of $(4y - 1)^4$

433) 2nd term in expansion of $(4x + 1)^3$

434) 3rd term in expansion of $(b + 2a)^4$

435) 3rd term in expansion of $(3 + m)^4$

436) 4th term in expansion of $(y - x)^4$

437) 4th term in expansion of $(2y - 1)^3$

438) 2nd term in expansion of $(3x - y)^4$

439) 2nd term in expansion of $(2 - y)^3$

440) 3rd term in expansion of $(u + v)^3$

Use the information provided to write the standard form equation of each circle.

441) Center: $(16, -15)$
Radius: 2

442) Center: $(4, 10)$
Radius: 5

443) Center: $\left(\frac{21}{2}, -\frac{21}{2}\right)$
Radius: 3

444) Center: $\left(-\frac{31}{2}, \sqrt{185}\right)$
Radius: 1

445) Center: $(\sqrt{233}, 4\sqrt{2})$
Radius: $\sqrt{2}$

446) Center: $(-10, -7)$
Radius: 7

447) Center: $(-13, -7)$
Radius: 4

448) Center: $(-1, 1)$
Radius: 6

449) Center: $(10, 8)$
Radius: 3

450) Center: $\left(-\frac{15}{2}, \frac{13}{2}\right)$
Radius: 6

451) Center: $(-5, 7)$
Radius: 8

452) Center: $(6, 14)$
Radius: 3

453) Center: $(-15, -12)$
Radius: 1

454) Center: $(-4, -5)$
Radius: $\sqrt{106}$

455) Center: $(9, 2)$
Radius: 6

456) Center: $(-13, 10)$
Radius: $\sqrt{35}$

457) Center: $(-1, 16)$
Radius: 2

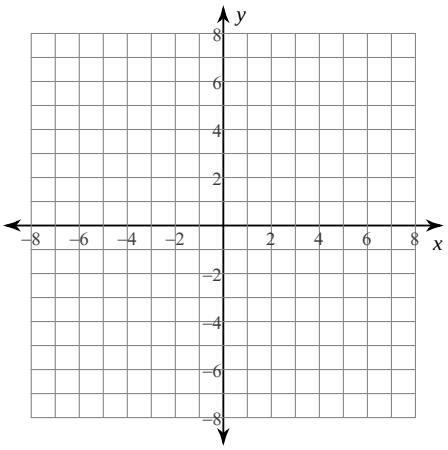
458) Center: $(10, -10)$
Radius: 7

459) Center: $(-11, -2)$
Radius: 2

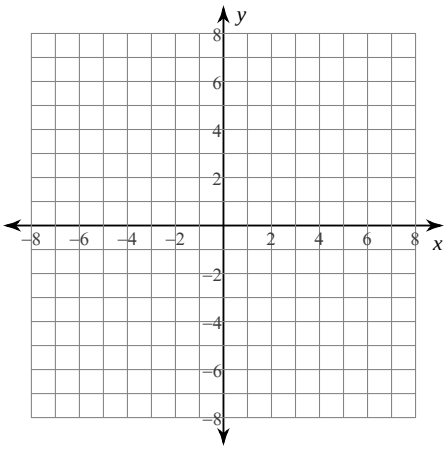
460) Center: $(1, 5)$
Radius: 8

Identify the center and radius of each. Then sketch the graph.

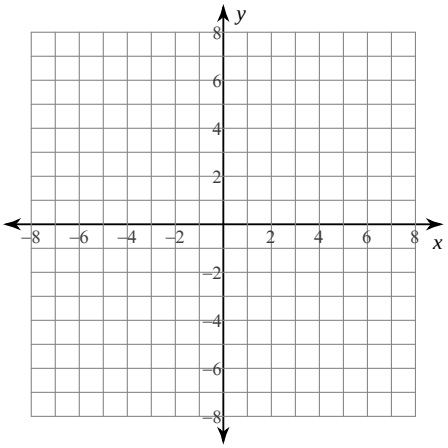
461) $(x+4)^2 + (y+4)^2 = 1$



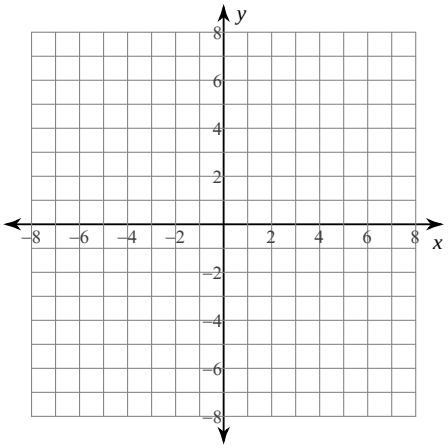
462) $(x-4)^2 + (y-4)^2 = 5$



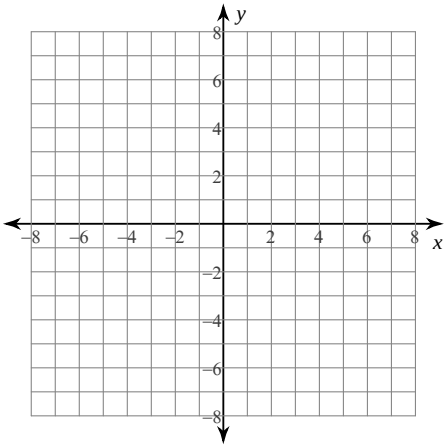
463) $(x-4)^2+(y-2)^2=6$



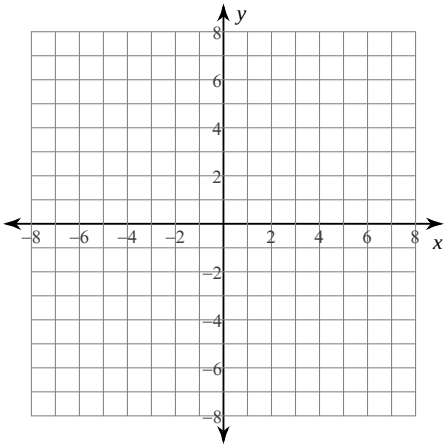
464) $(x-3)^2+y^2=9$



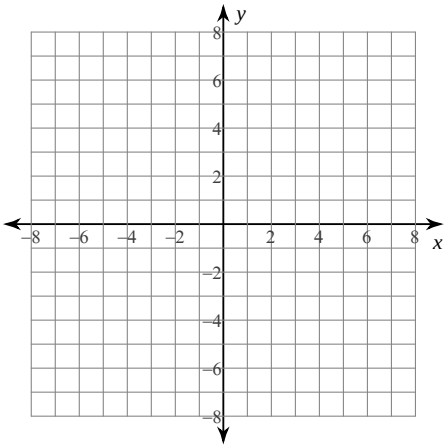
465) $(x-3)^2+(y+2)^2=5$



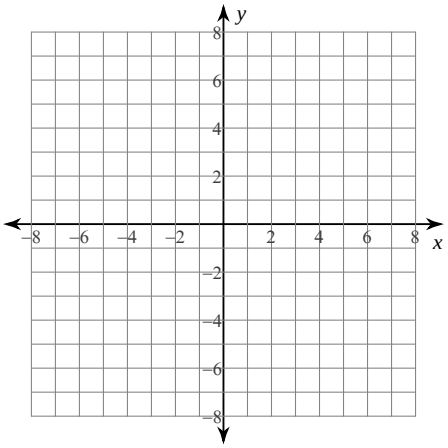
466) $(x-3)^2+(y+4)^2=9$



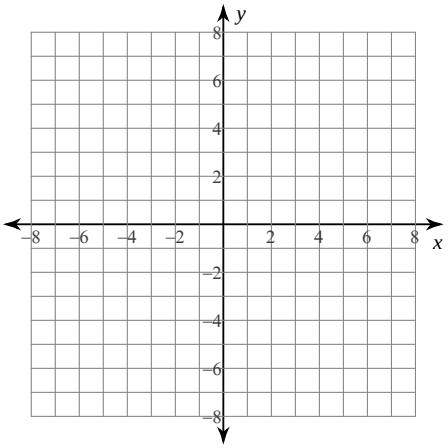
467) $(x-3)^2+(y-2)^2=4$



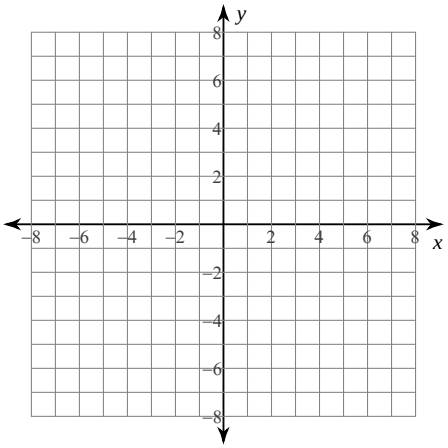
468) $(x-3)^2+(y-3)^2=4$



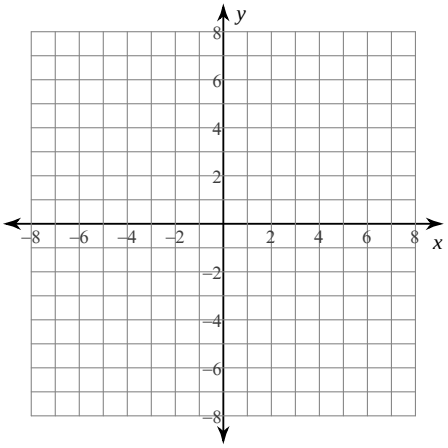
469) $(x-2)^2+(y+1)^2=9$



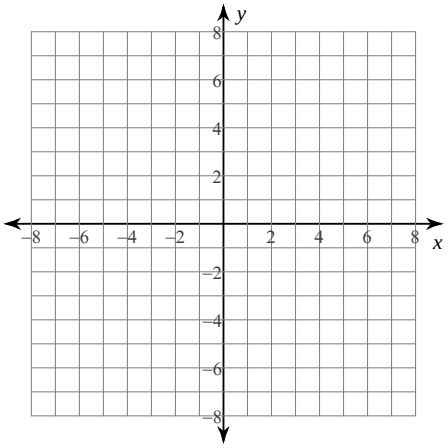
470) $(x-2)^2+(y+3)^2=10$



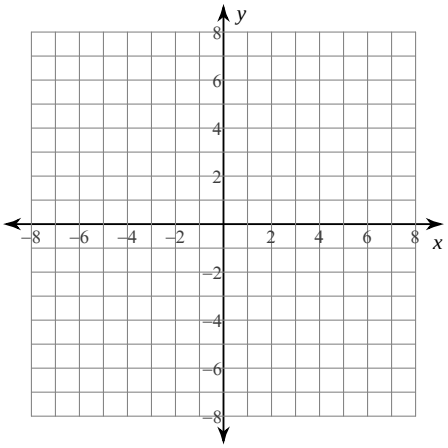
471) $(x-1)^2+(y-4)^2=1$



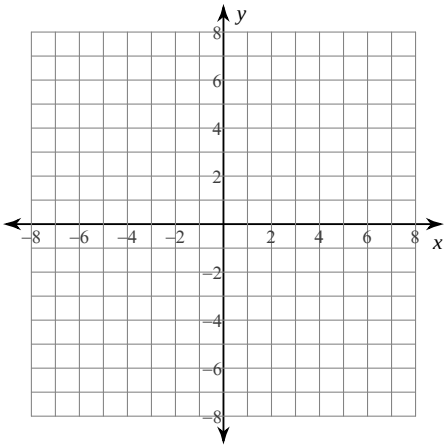
472) $(x-1)^2+(y-3)^2=4$



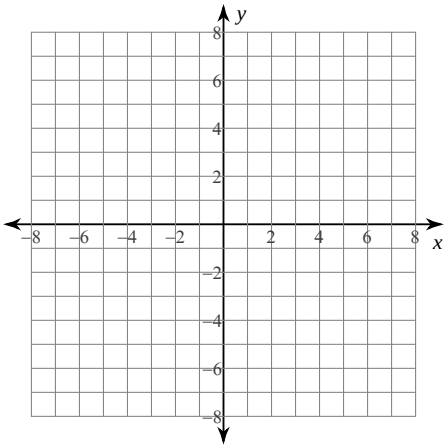
473) $(x-1)^2+y^2=9$



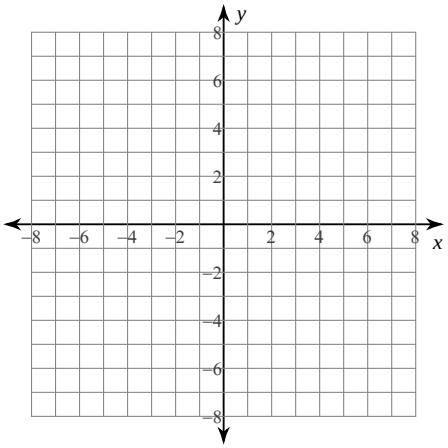
474) $(x-1)^2+(y+2)^2=9$



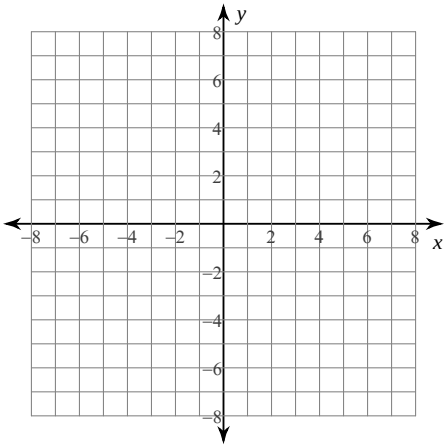
475) $x^2 + (y+3)^2 = 1$



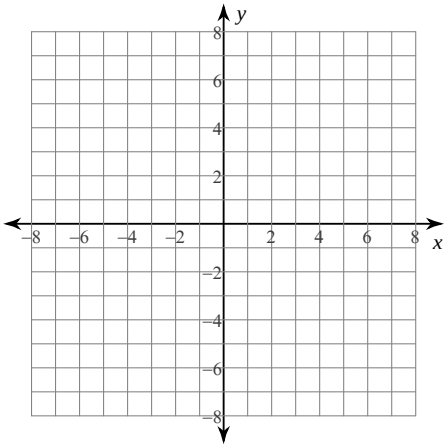
476) $x^2 + (y-3)^2 = 4$



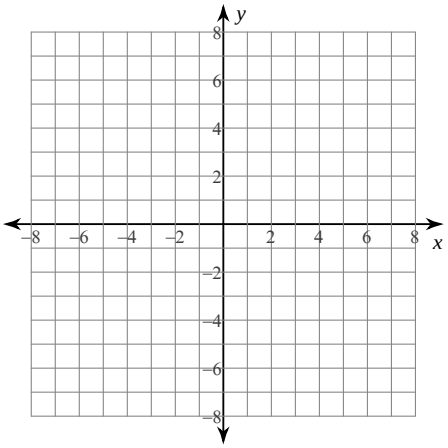
477) $x^2 + (y-1)^2 = 36$



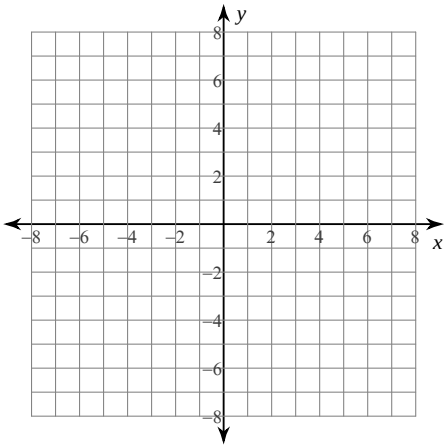
478) $(x+1)^2 + y^2 = 4$



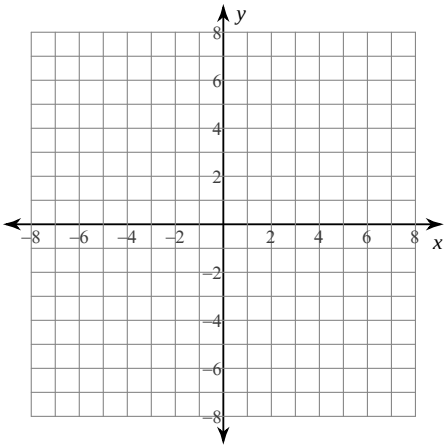
479) $(x+1)^2 + (y-4)^2 = 9$



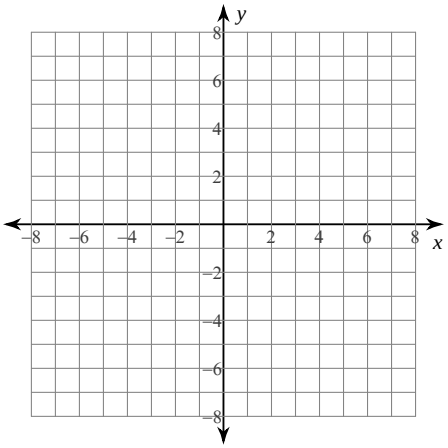
480) $x^2 + (y+2)^2 = 4$



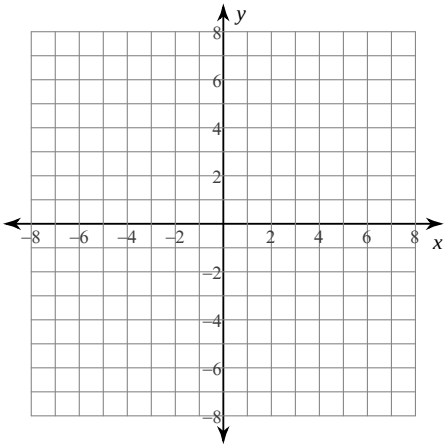
481) $(x+3)^2+(y+3)^2=4$



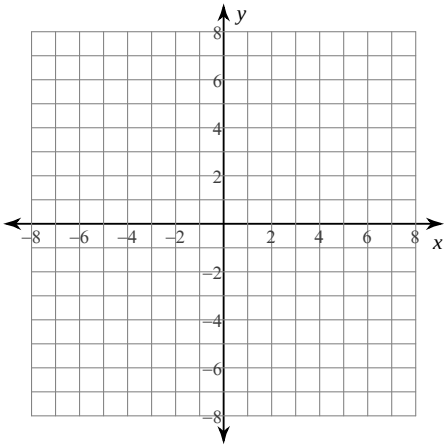
482) $(x+3)^2+(y-3)^2=11$



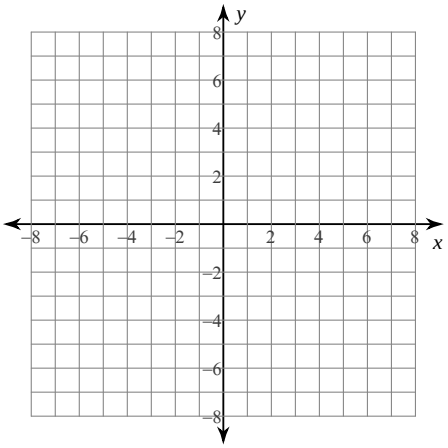
483) $(x+4)^2+(y-2)^2=1$



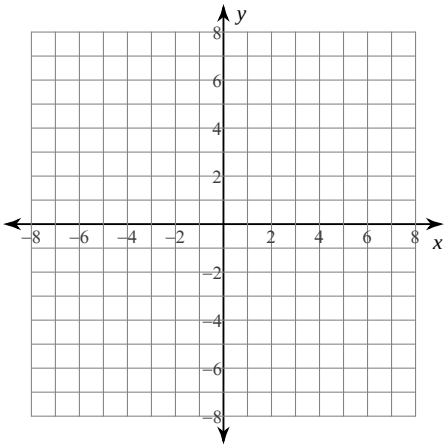
484) $(x+3)^2+y^2=16$



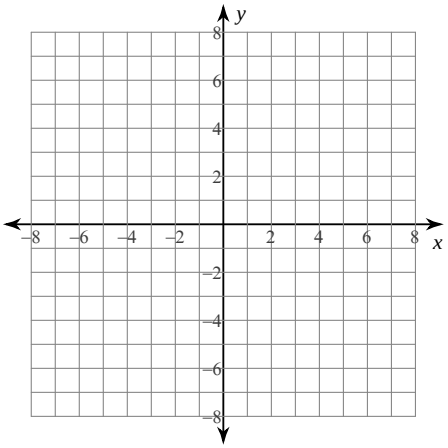
485) $(x+4)^2+(y+2)^2=6$



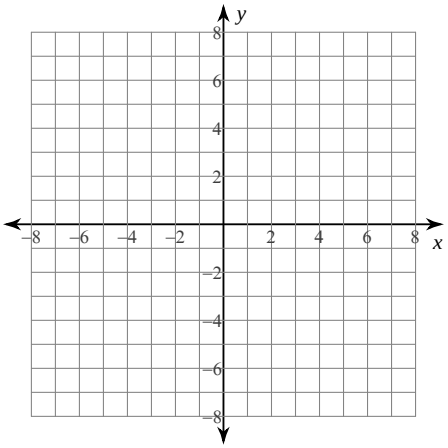
486) $(x+4)^2+(y+4)^2=1$



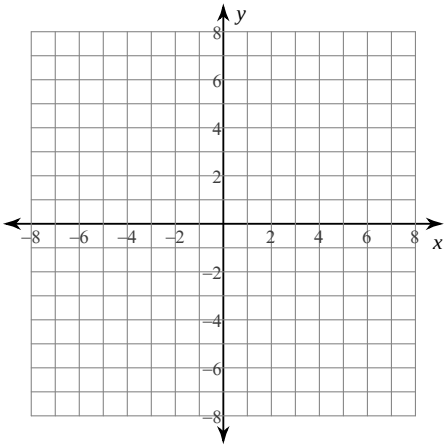
487) $(x-4)^2+(y-1)^2=9$



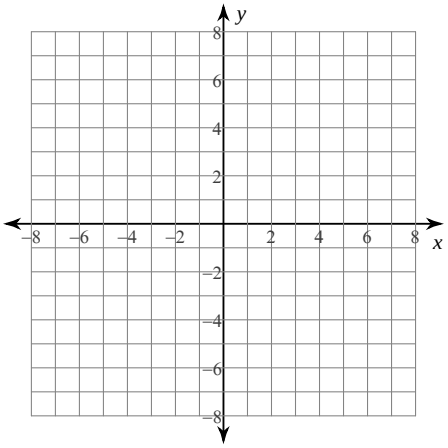
488) $(x-4)^2+(y-3)^2=9$



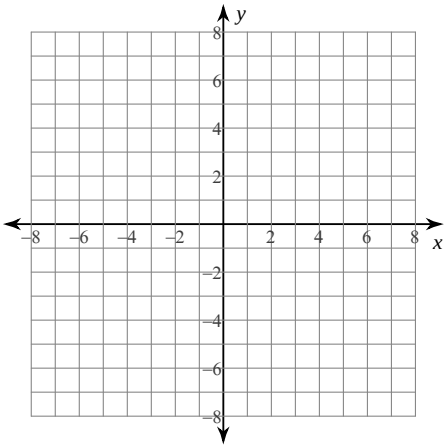
489) $(x+4)^2+(y+1)^2=1$



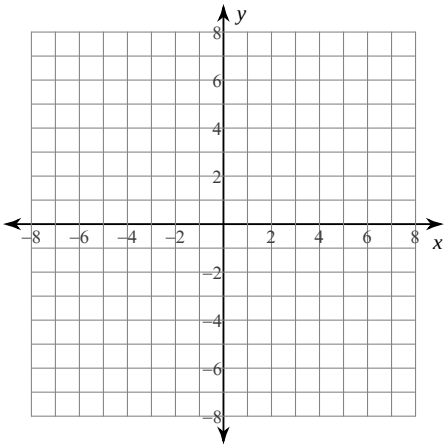
490) $(x-4)^2+(y+3)^2=4$



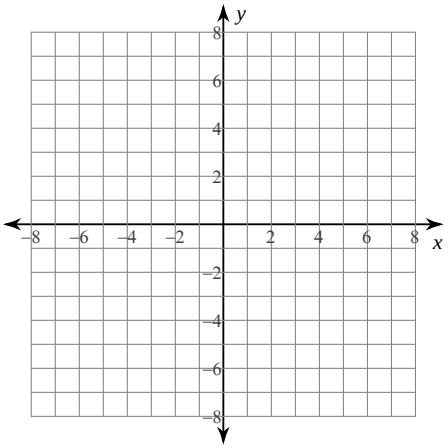
491) $(x+1)^2+(y+2)^2=9$



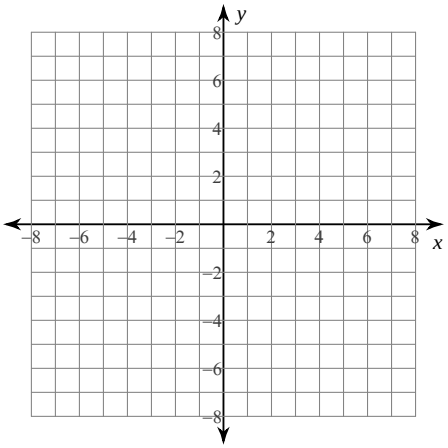
492) $(x+1)^2+(y-4)^2=5$



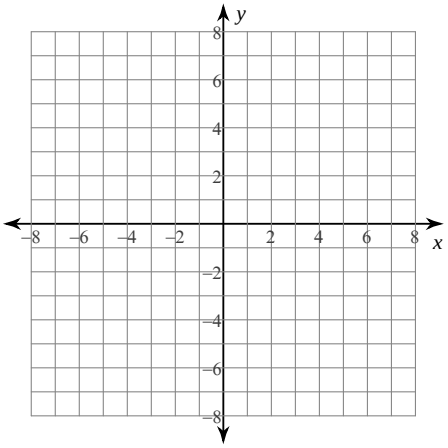
493) $(x+1)^2+(y-2)^2=25$



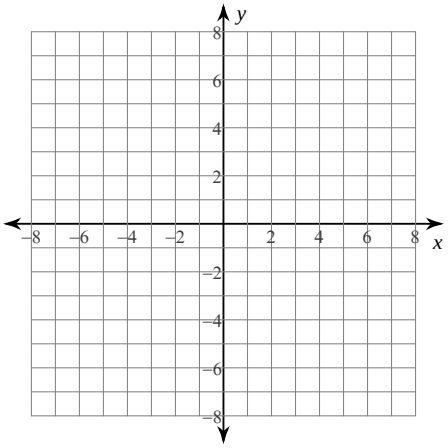
494) $(x+1)^2+(y-1)^2=24$



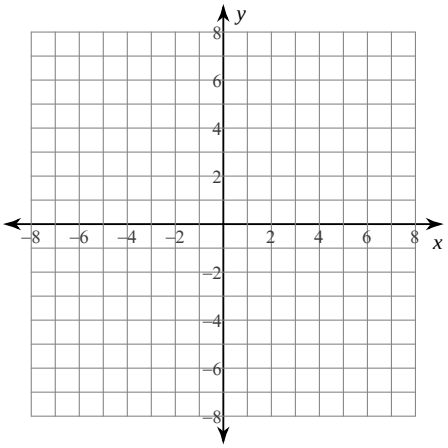
495) $(x+2)^2+(y+4)^2=9$



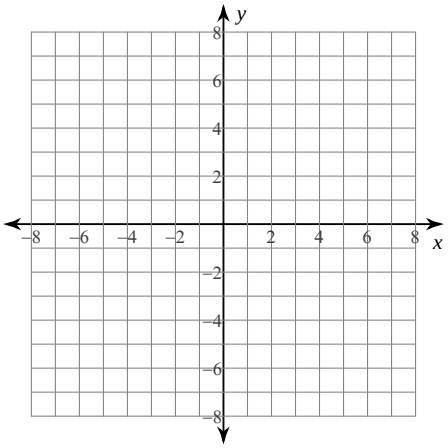
496) $(x+1)^2+(y+2)^2=17$



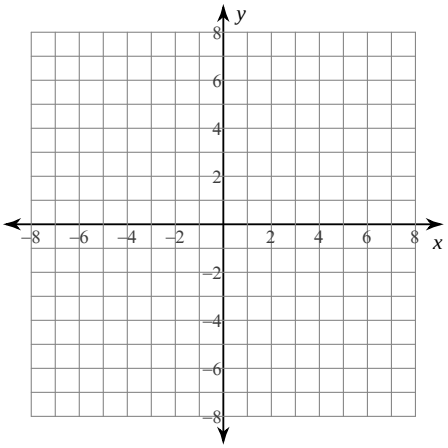
497) $(x+3)^2+(y-2)^2=4$



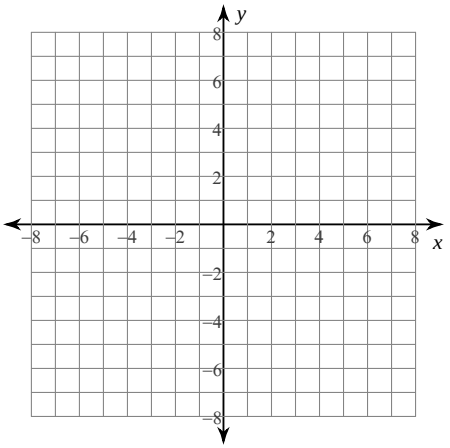
498) $(x+2)^2+(y-4)^2=9$



499) $(x+3)^2+(y+1)^2=1$



500) $\left(x+\frac{3}{2}\right)^2+\left(y+\frac{3}{2}\right)^2=16$



Simplify each expression.

501) $1-6x-3x+6$

502) $-7p+3p$

503) $-8n+2n$

504) $m-6-8$

505) $r+5+3$

506) $6x-x$

507) $-3b+7b$

508) $7n+9-9-3n$

509) $-5-8v-5v-1$

510) $-3x+6x$

511) $\dfrac{\frac{4}{9}}{\frac{9}{4}-\frac{x}{4}}$

512) $\dfrac{4}{\frac{u+1}{u}-\frac{u+1}{16}}$

513) $\dfrac{\frac{1}{x}-\frac{1}{5}}{x}$

514) $\dfrac{\frac{4a}{a+4}-\frac{a^2}{a+4}}{\frac{a}{4a+16}}$

515) $\dfrac{\frac{x}{2}}{\frac{8}{x}+\frac{1}{4}}$

516) $\dfrac{\frac{15}{a^2}+\frac{25}{9}}{3a}$

517) $\dfrac{\frac{1}{2}+\frac{1}{8}}{m}$

518) $\dfrac{\frac{4}{5}}{\frac{25}{2}-\frac{m^2}{4}}$

519) $\dfrac{\frac{1}{5}+\frac{25}{x^2}}{\frac{x-3}{x^2}}$

520) $\dfrac{\frac{x+1}{5}}{\frac{x+1}{x-1}+\frac{x+1}{25}}$

521) $-5x-4+5$

522) $10n-5+1$

523) $3b-8b$

524) $1-8r+3r+6$

525) $2x+7x$

526) $-7+4n+8$

527) $a+6a$

528) $-5v-3v$

529) $x+7+8x-5$

530) $-6x-4x$

531) $\dfrac{8k+48}{k-9} \div \dfrac{k+6}{k-9}$

532) $\dfrac{n-10}{6n-6} \div \dfrac{n-10}{-n^2+4n-3}$

533) $\dfrac{p+3}{p^2+14p+48} \div \dfrac{1}{p+6}$

534) $\dfrac{6}{x^2+4x-45} \div \dfrac{1}{x^2+4x-45}$

535) $\dfrac{9}{10n+30} \div \dfrac{1}{n+3}$

536) $\dfrac{70-20m}{20m-70} \div \dfrac{1}{5m^2}$

537) $\dfrac{r^2-8r-20}{r-10} \div \dfrac{8r+16}{r-7}$

538) $\dfrac{27x^2+72x}{x+2} \div \dfrac{9x+24}{x+2}$

539) $\dfrac{n-4}{3n} \div \dfrac{2n-12}{12-2n}$

540) $\dfrac{4}{4b-28} \div \dfrac{4}{6b^2}$

541) $\dfrac{9n-63}{n+2} \cdot \dfrac{1}{n-7}$

542) $\dfrac{1}{8x^2} \cdot \dfrac{8x^3-8x^2}{7}$

543) $\dfrac{1}{a+4} \cdot \dfrac{8a+32}{6}$

544) $\dfrac{k-2}{10} \cdot \dfrac{5k-5}{k^2-3k+2}$

545) $\frac{1-x}{2} \cdot \frac{9x+72}{x^2+7x-8}$

546) $\frac{15x+35}{x-8} \cdot \frac{2x}{6x^2+14x}$

547) $\frac{8n^2}{n^2-n-30} \cdot \frac{n^2-n-30}{6}$

548) $\frac{m+7}{9} \cdot \frac{45m-18}{16m-40m^2}$

549) $\frac{7p+14}{p+7} \cdot \frac{p-8}{p^2-6p-16}$

550) $\frac{1}{x-8} \cdot \frac{x^2+6x-16}{x^2+2x-8}$

551) $(8n^3+3n^4+5n^2)+(5n^3-4n^4+2n^2)$

552) $(6b^2+b-2)-(b-6b^2+6)$

553) $(6+8x-x^4)+(7x^4-7+x)$

554) $(7x^2-7x^3-4)+(7-3x^3-x^2)$

555) $(4x^4+x+2)-(3x^4+3x+3)$

556) $(1+5k^2+6k^4)+(8k^2+2+4k^4)$

557) $(2r^2-6r+5r^4)+(r^2-8r+6r^3)$

558) $(6m^4-2m^2+8m)+(8m^2-6m^3+4m)$

559) $(n^3-2+4n^4)-(4n^4+6+6n^3)$

560) $(7b^4-7b+b^3)+(6-8b^3-4b)$

561) $\frac{3x}{x-5}+\frac{6}{3}$

562) $\frac{5}{5n-5}+\frac{4n}{n+3}$

563) $\frac{m-5}{4m^2+24m}+3$

564) $\frac{6}{r+1}+\frac{3}{r+4}$

565) $\frac{4}{x+5}+\frac{3}{4x}$

566) $\frac{3}{n+3}+\frac{6}{n-3}$

567) $\frac{3b}{b+2}+\frac{5}{b+3}$

568) $\frac{v-5}{3v-15}+\frac{6}{2}$

569) $\frac{2}{2p^3}-\frac{p-4}{3p-6}$

570) $\frac{6x}{x-4}+\frac{2x}{5x+5}$

571) $\dfrac{\dfrac{x-3}{x^2}}{\dfrac{4}{x^2}+\dfrac{x^2}{x-3}}$

572) $\dfrac{\dfrac{16}{5x}}{\dfrac{1}{5}-\dfrac{x^2}{5}}$

573) $\dfrac{9}{\dfrac{9}{2}-\dfrac{2x}{3}}$

574) $\dfrac{\dfrac{m+1}{m+2}+\dfrac{m+1}{m+2}}{m}$

575) $\dfrac{\dfrac{u}{3}-\dfrac{4}{u^2}}{16}$

576) $\dfrac{\dfrac{1}{2}}{\dfrac{x}{10}-\dfrac{2}{x}}$

577) $\dfrac{\dfrac{u}{2}-\dfrac{1}{u}}{\dfrac{u}{4}}$

578) $\dfrac{\dfrac{25}{x+1}-\dfrac{x+1}{25}}{x+1}$

579) $\dfrac{\dfrac{1}{5}+\dfrac{1}{3}}{a}$

580) $\dfrac{\dfrac{2}{x-3}-\dfrac{x-3}{x+2}}{x-3}$

581) $\dfrac{2b^2+6b}{b+3} \div \dfrac{7b^2}{2b^2}$

582) $\dfrac{r^2+12r+20}{r-2} \div \dfrac{r^2+9r+14}{2-r}$

583) $\dfrac{1}{5x^2} \div \dfrac{5}{5x^3+40x^2}$

584) $\dfrac{n-2}{-n^2+7n-10} \div \dfrac{1}{n-5}$

585) $\dfrac{b+8}{3b} \div \dfrac{b+8}{3b^2+21b}$

586) $\dfrac{10v^2}{v+9} \div \dfrac{v+7}{v^2+16v+63}$

587) $\dfrac{9x}{27x^2+9x} \div \dfrac{4}{30x^2+10x}$

588) $\dfrac{1}{8x^2} \div \dfrac{x-5}{8x^3+32x^2}$

589) $\dfrac{10k^2+30k}{10k} \div \dfrac{k+3}{10}$

590) $\dfrac{a^2+4a-32}{a+2} \div \dfrac{32-4a-a^2}{6a^2}$

591) $\dfrac{1}{x-2} \cdot \dfrac{x^2+x-6}{8}$

592) $\dfrac{p+5}{5} \cdot \dfrac{10p-50}{16p-80}$

593) $\frac{n+4}{3} \cdot \frac{n-8}{24n^2-3n^3}$

594) $\frac{1}{m-6} \cdot \frac{m^2-13m+42}{m^2-13m+36}$

595) $\frac{50x-90}{x+1} \cdot \frac{8x^2}{40x^3-72x^2}$

596) $\frac{r+9}{7} \cdot \frac{r+2}{3r+6}$

597) $\frac{14n-21}{7-n} \cdot \frac{n-7}{12n^3-18n^2}$

598) $\frac{b^2+6b+8}{b-7} \cdot \frac{1}{b+2}$

599) $\frac{9v^2+9v}{9v} \cdot \frac{v-8}{9v^2-72v}$

600) $\frac{5}{x+3} \cdot \frac{x^2-9}{x-3}$

Find the value that completes the square and then rewrite as a perfect square.

601) $y^2-6y+\_\_$

602) $x^2-20x+\_\_$

603) $p^2+\frac{23}{6}p+\_\_$

604) $x^2+14x+\_\_$

605) $n^2-34n+\_\_$

606) $a^2+13a+\_\_$

607) $x^2-12x+\_\_$

608) $x^2-19x+\_\_$

609) $r^2+17r+\_\_$

610) $m^2-5m+\_\_$

Solve each equation by completing the square.

611) $b^2-14b+46=6$

612) $v^2-20v-79=-10$

613) $x^2-2x-29=-5$

614) $n^2-8n-7=-10$

615) $k^2+2k-53=-5$

616) $x^2-4x-18=-6$

617) $a^2 - 16a - 66 = -7$

618) $x^2 - 12x - 42 = -4$

619) $k^2 - 20k + 90 = 3$

620) $n^2 + 8n - 97 = 3$

621) $k^2 - 8k - 56 = -8$

622) $p^2 - 16p - 25 = -3$

623) $n^2 - 4n - 74 = 3$

624) $m^2 - 10m + 29 = 5$

625) $r^2 + 8r + 7 = -8$

626) $x^2 + 4x - 90 = -6$

627) $x^2 + 14x + 50 = 10$

628) $b^2 + 12b - 36 = 6$

629) $n^2 - 6n - 105 = -6$

630) $v^2 + 6v + 14 = 6$

631) $x^2 + 8x + 16 = 9$

632) $m^2 - 6m - 15 = -8$

633) $r^2 + 12r + 37 = 2$

634) $n^2 - 14n + 17 = 7$

635) $n^2 - 2n - 102 = -5$

636) $x^2 + 4x - 13 = -6$

637) $b^2 + 16b - 28 = 8$

638) $v^2 + 10v + 23 = 2$

639) $x^2 + 2x - 50 = -3$

640) $n^2 - 6n - 72 = -7$

Simplify.

641) $\frac{-4}{-9i}$

642) $\frac{3}{-5i}$

643) $\dfrac{1}{2i}$

644) $\dfrac{1+8i}{-7i}$

645) $\dfrac{8+10i}{-3i}$

646) $\dfrac{1+7i}{-i}$

647) $\dfrac{7+10i}{3i}$

648) $\dfrac{7-3i}{-5i}$

649) $\dfrac{7+6i}{-8i}$

650) $\dfrac{6+4i}{i}$

651) $(-2+5i)(6-i)$

652) $(-8+3i)(1-6i)$

653) $(-6+4i)(5+4i)$

654) $(3+4i)(5-5i)$

655) $(-5i)(6i)(-2+2i)$

656) $7(-4i)(2+5i)$

657) $(3i)(-4i)(-4-7i)$

658) $3(-4i)(-5-7i)$

659) $(4i)(-5i)(-6+3i)$

660) $(7-i)^2$

661) $(1+5i)+(8+5i)$

662) $(-8-7i)-(4+7i)$

663) $(-6+i)-(4+3i)$

664) $(2-7i)+(4-3i)$

665) $(2-8i)+(7i)+(6i)$

666) $(-6-2i)-(-1+6i)$

667) $(-6-i)+(8-8i)$

668) $(-8i)-4+(1-3i)$

669) $(-5-3i)+(-4-6i)$

670) $-4-(-6+5i)-(8i)$

671) $\dfrac{10-2i}{-1-6i}$

672) $\dfrac{-1+2i}{-5+9i}$

673) $\dfrac{7+i}{1+8i}$

674) $\dfrac{9+6i}{5-6i}$

675) $\dfrac{-4+5i}{-2-7i}$

676) $\dfrac{6+8i}{7+7i}$

677) $\dfrac{-4+4i}{3-8i}$

678) $\dfrac{7+4i}{-1-7i}$

679) $\dfrac{3-10i}{9-8i}$

680) $\dfrac{2i}{6-2i}$

681) $\dfrac{7-9i}{6i}$

682) $\dfrac{-7}{-2i}$

683) $\dfrac{-7+4i}{2i}$

684) $-\dfrac{1}{4i}$

685) $\dfrac{6}{8i}$

686) $-\dfrac{2}{10i}$

687) $\dfrac{5}{i}$

688) $-\dfrac{2}{3i}$

689) $\dfrac{4}{6i}$

690) $\dfrac{4}{-9i}$

691) $\dfrac{\sqrt{2}}{3\sqrt{8}}$

692) $\dfrac{\sqrt{10}}{3\sqrt{5}}$

693) $\dfrac{\sqrt{9}}{\sqrt{25}}$

694) $\dfrac{\sqrt{3}}{5\sqrt{16}}$

695) $\dfrac{\sqrt{3}}{4\sqrt{12}}$

696) $\dfrac{\sqrt{15}}{\sqrt{27}}$

697) $\dfrac{\sqrt{10}}{5\sqrt{18}}$

698) $\dfrac{\sqrt{5}}{\sqrt{45}}$

699) $\dfrac{\sqrt{8}}{3\sqrt{25}}$

700) $\dfrac{\sqrt{3}}{\sqrt{16}}$

701) $\dfrac{5i}{10-8i}$

702) $\dfrac{2i}{6+6i}$

703) $\dfrac{6}{3-9i}$

704) $\dfrac{1}{-9+6i}$

705) $\dfrac{7}{8-9i}$

706) $\dfrac{2}{5+5i}$

707) $\dfrac{7i}{-7-10i}$

708) $\dfrac{-3+i}{7+10i}$

709) $\dfrac{3i}{-10-4i}$

710) $\dfrac{-6+4i}{-5-4i}$

711) $(-3+i)(8-5i)$

712) $(-7-7i)^2$

713) $(2-6i)(5+2i)$

714) $(-8-6i)(-3-2i)$

715) $3(2i)(3-8i)$

716) $8(2i)(-1+8i)$

717) $(-3+3i)(4+6i)$

718) $(5-3i)(-4+2i)$

719) $(-2+5i)(3+7i)$

720) $(8-5i)^2$

721) $\sqrt{5}(3-\sqrt{5})$

722) $\sqrt{3}(3\sqrt{6}+\sqrt{5})$

723) $5\sqrt{6}(3\sqrt{3}+\sqrt{2})$

724) $\sqrt{6}(\sqrt{3}+2)$

725) $-3\sqrt{5}(\sqrt{5}+4)$

726) $\sqrt{6}(\sqrt{2}+3\sqrt{5})$

727) $\sqrt{10}(3\sqrt{5}-3\sqrt{2})$

728) $-4\sqrt{3}(4\sqrt{5}+\sqrt{6})$

729) $\sqrt{2}(\sqrt{6}+4)$

730) $\sqrt{5}(5\sqrt{6}+\sqrt{5})$

731) $-\sqrt{45} - 2\sqrt{24} + 2\sqrt{5}$

732) $-2\sqrt{12} - 3\sqrt{5} - 3\sqrt{3}$

733) $-3\sqrt{5} - \sqrt{20} + 2\sqrt{8}$

734) $-\sqrt{45} - \sqrt{8} - 3\sqrt{8}$

735) $2\sqrt{2} + 3\sqrt{3} + 2\sqrt{27}$

736) $2\sqrt{6} - 2\sqrt{2} + 2\sqrt{6}$

737) $-\sqrt{5} - 3\sqrt{6} - \sqrt{5}$

738) $-2\sqrt{3} + 2\sqrt{12} - 2\sqrt{3}$

739) $3\sqrt{20} + 3\sqrt{20} - \sqrt{12}$

740) $-3\sqrt{54} - \sqrt{20} - 2\sqrt{24}$

741) $\dfrac{4\sqrt{20}}{\sqrt{9}}$

742) $\dfrac{5\sqrt{12}}{2\sqrt{27}}$

743) $\dfrac{5\sqrt{10}}{\sqrt{18}}$

744) $\dfrac{\sqrt{15}}{2\sqrt{80}}$

745) $\dfrac{\sqrt{5}}{5\sqrt{80}}$

746) $\dfrac{\sqrt{5}}{\sqrt{16}}$

747) $\dfrac{\sqrt{20}}{4\sqrt{9}}$

748) $\dfrac{\sqrt{3}}{\sqrt{75}}$

749) $\dfrac{\sqrt{9}}{\sqrt{25}}$

750) $\dfrac{\sqrt{2}}{2\sqrt{32}}$

751) $4\sqrt{10}\left(\sqrt{10} + 2\right)$

752) $-4\sqrt{5}\left(2 - 3\sqrt{10}\right)$

753) $-4\sqrt{5}\left(\sqrt{10} + \sqrt{6}\right)$

754) $\sqrt{3}\left(\sqrt{10} + 5\right)$

755) $\sqrt{15}\left(-5\sqrt{5} + 5\right)$

756) $\sqrt{15}\left(\sqrt{5} + 4\right)$

757) $2\sqrt{5}\left(\sqrt{10} + 2\right)$

758) $-2\sqrt{5}\left(\sqrt{10} + 2\right)$

759) $\sqrt{5}\left(4-4\sqrt{5}\right)$

760) $\sqrt{15}\left(4+2\sqrt{5}\right)$

761) $\sqrt[4]{80k^2}$

762) $\sqrt[3]{135x^5}$

763) $\sqrt[4]{64x}$

764) $\sqrt[3]{256m^5}$

765) $\sqrt[5]{160m^8}$

766) $\sqrt[3]{128a^8}$

767) $\sqrt[3]{-375x^4}$

768) $\sqrt[3]{250x^8}$

769) $\sqrt[4]{32a^7}$

770) $\sqrt{252x^2}$

771) $\left(p^6\right)^{\frac{1}{2}}$

772) $\left(243k^{15}\right)^{\frac{7}{5}}$

773) $\left(81x^6\right)^{\frac{3}{2}}$

774) $\left(27n^3\right)^{\frac{2}{3}}$

775) $\left(625m^{12}\right)^{\frac{1}{4}}$

776) $\left(64r^4\right)^{\frac{1}{2}}$

777) $\left(x^3\right)^{\frac{2}{3}}$

778) $\left(1000000v^{12}\right)^{\frac{1}{6}}$

779) $\left(b^6\right)^{\frac{5}{3}}$

780) $\left(9x^2\right)^{\frac{1}{2}}$

781) $-\frac{5}{8i}$

782) $\frac{4}{-6-8i}$

783) $\frac{3+7i}{-6+5i}$

784) $\frac{5}{2i}$

785) $\frac{7i}{-7-9i}$

786) $\frac{-1}{-8i}$

787) $\dfrac{4i}{-1+2i}$

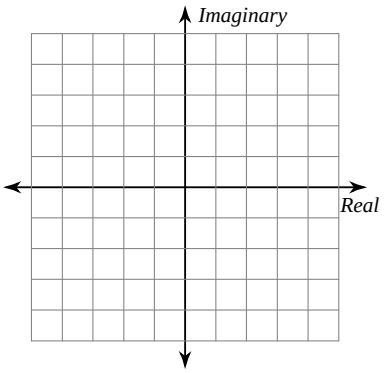
788) $\dfrac{9i}{-2+9i}$

789) $\dfrac{6}{-9i}$

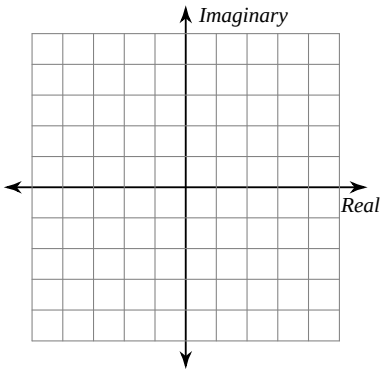
790) $\dfrac{3i}{-2-4i}$

Graph each number in the complex plane.

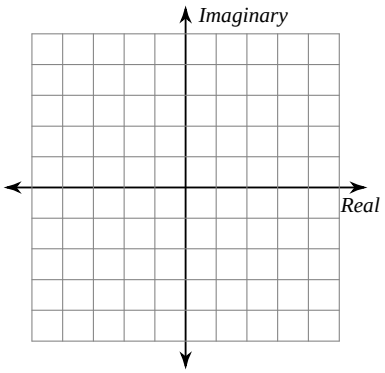
791) $-5-2i$



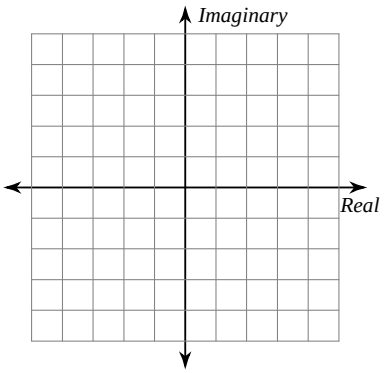
792) $3-3i$



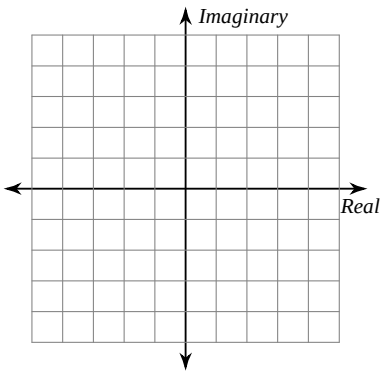
793) $2+2i$



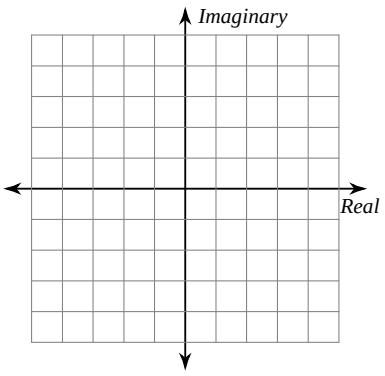
794) $-2+i$



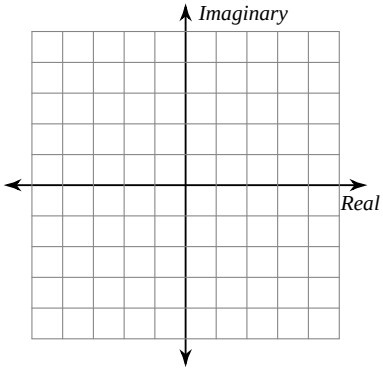
795) $5+3i$



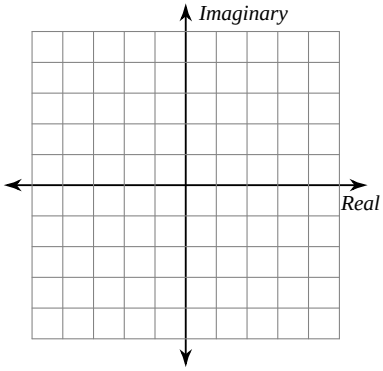
796) $-3-5i$



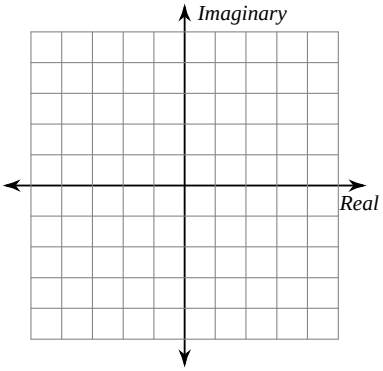
797) $-4i$



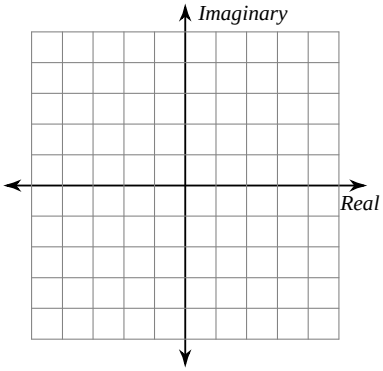
798) $4 - 2i$



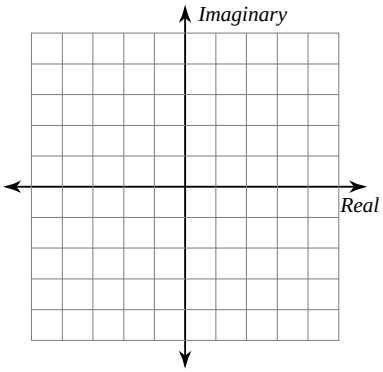
799) -4



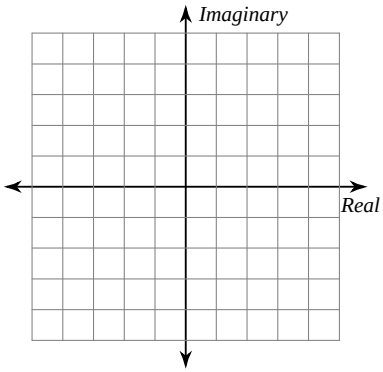
800) $-1 + i$



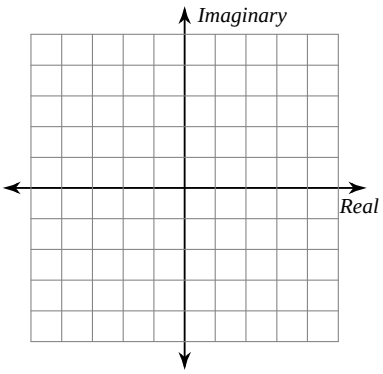
801) $-3 - 5i$



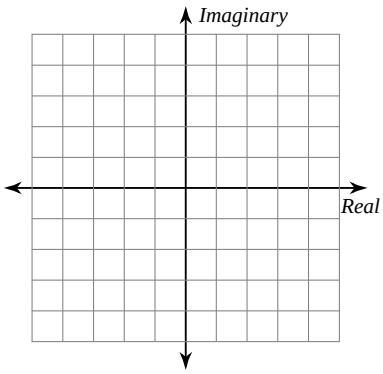
802) $4 - 2i$



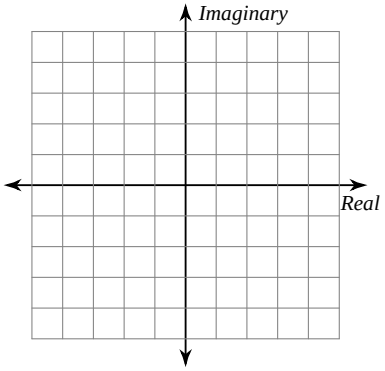
803) -4



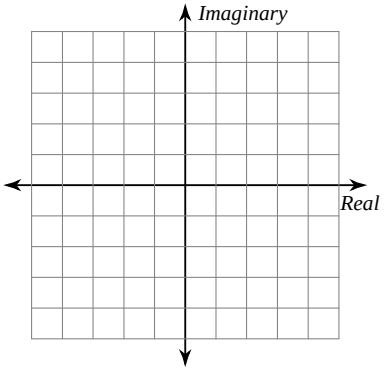
804) $-4i$



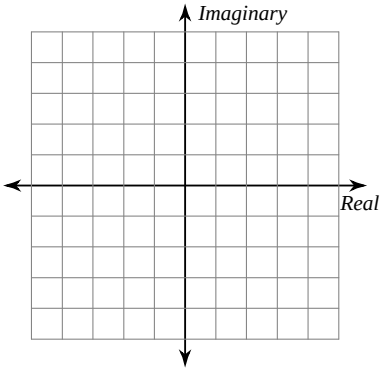
805) $2 + 3i$



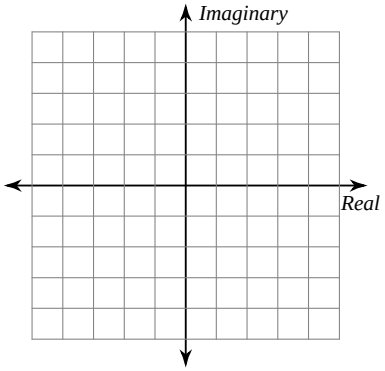
806) $-1 + i$



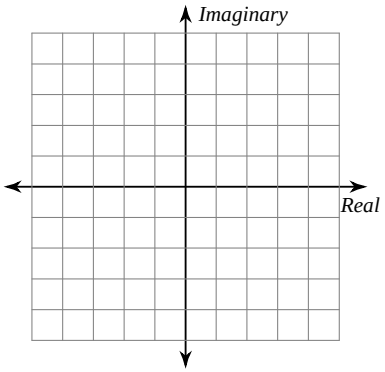
807) $-2 - 4i$



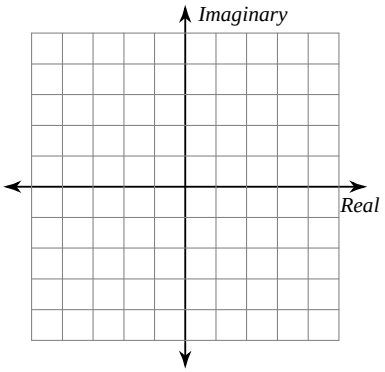
808) $1 - 3i$



809) $4 - i$

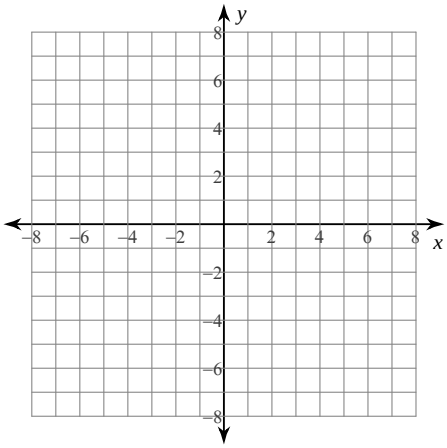


810) $-5 + 5i$

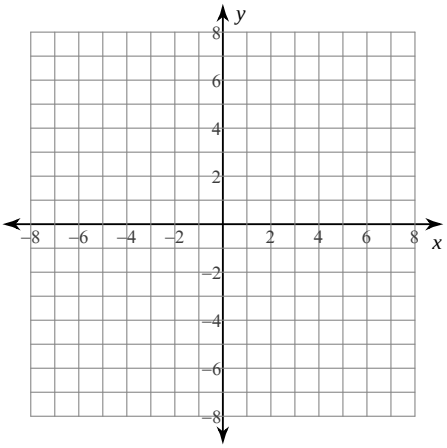


Classify each conic section, write its equation in standard form, and sketch its graph.

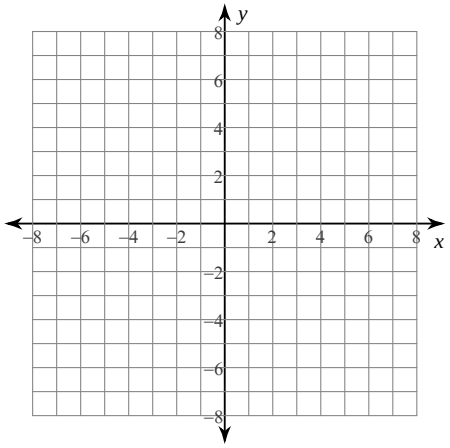
811) $2x^2 + y + 4 = 0$



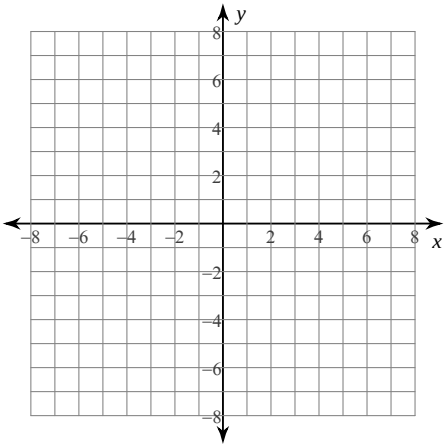
812) $x^2 - y^2 + 4x - 2y + 2 = 0$



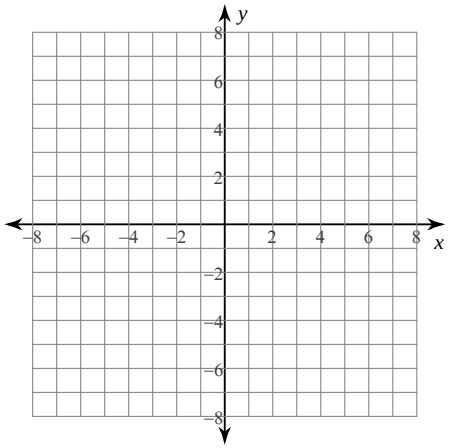
813) $4x^2 + 4y^2 + 12x - 32y + 37 = 0$



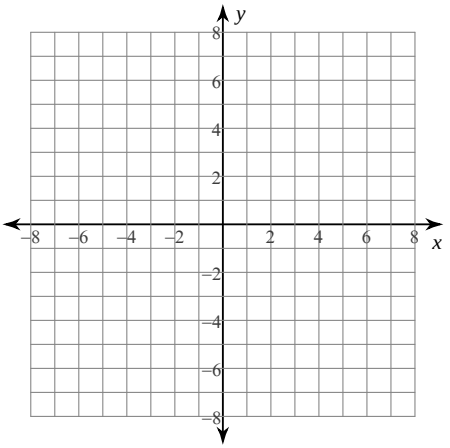
814) $9x^2 + 49y^2 + 98y - 392 = 0$



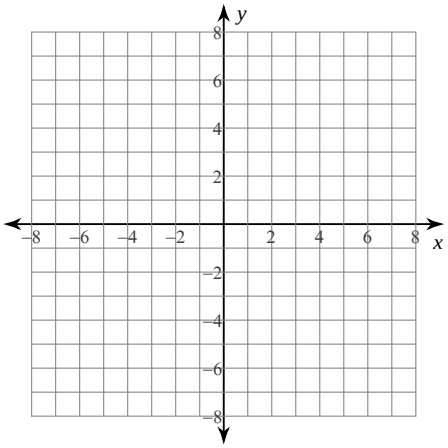
815) $x^2 + y^2 - 4x - 4y - 7 = 0$



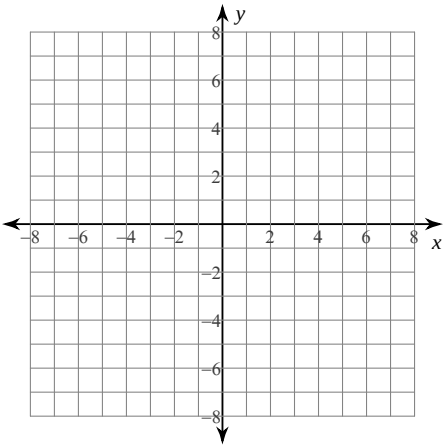
816) $9x^2 + 4y^2 + 72x - 32y + 172 = 0$



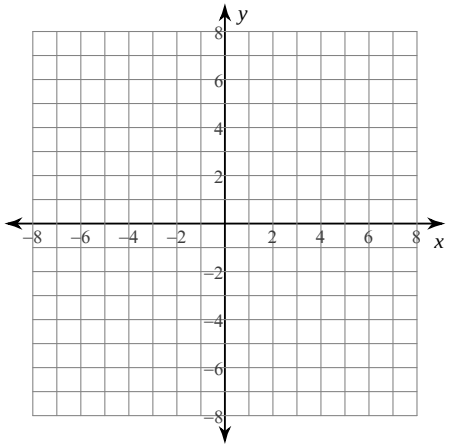
817) $y^2 + x - 10y + 26 = 0$



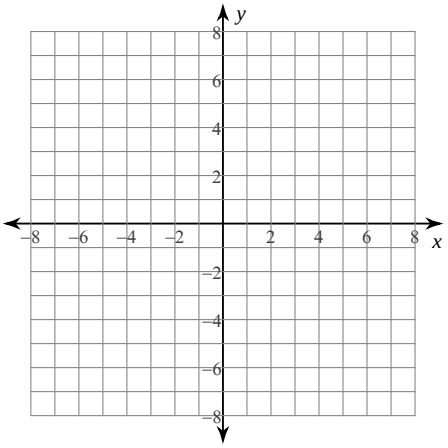
818) $-3x^2 - 12x + y - 7 = 0$



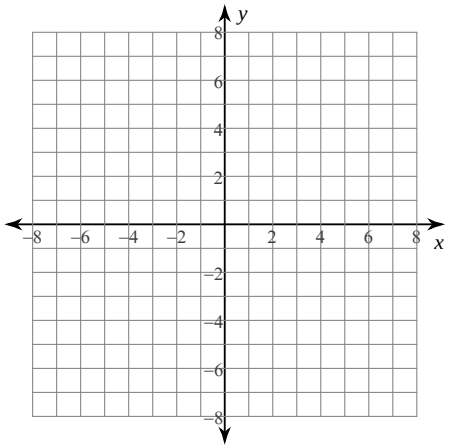
819) $9x^2 + 4y^2 + 54x - 63 = 0$



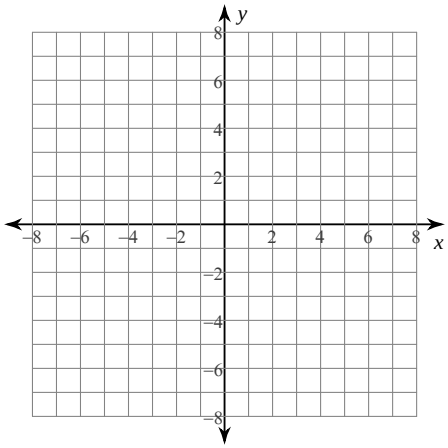
820) $x^2 - 4y^2 - 24y - 52 = 0$



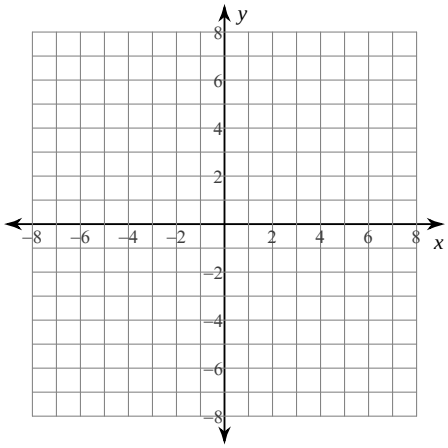
821) $x^2 + y^2 - 6x + 2y + 9 = 0$



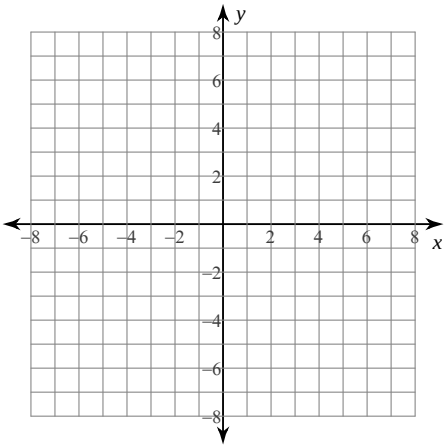
822) $-y^2 + 4x + 4y - 8 = 0$



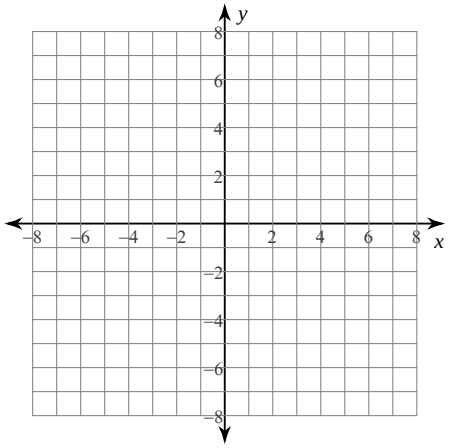
823) $-16x^2 + 9y^2 - 18y - 135 = 0$



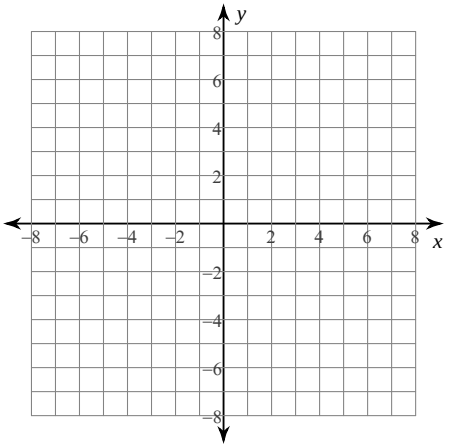
824) $49x^2 + 9y^2 + 98x - 392 = 0$



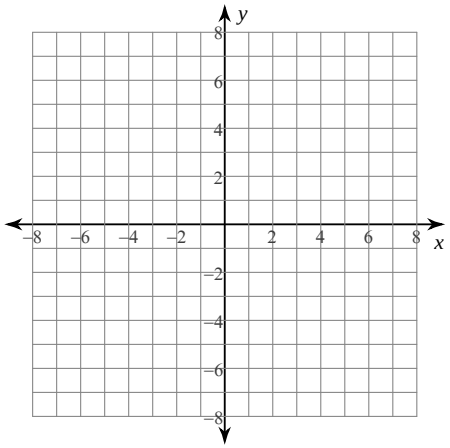
825) $16x^2 - y^2 + 112x + 2y + 179 = 0$



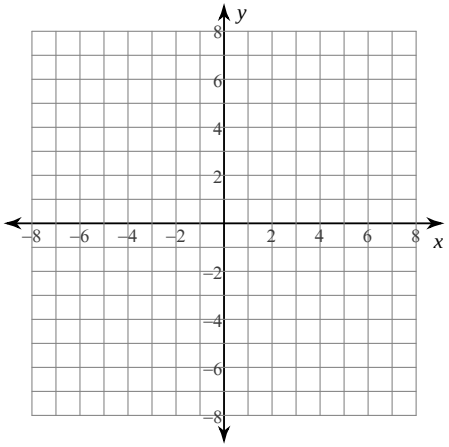
826) $-y^2 + x + 12y - 36 = 0$



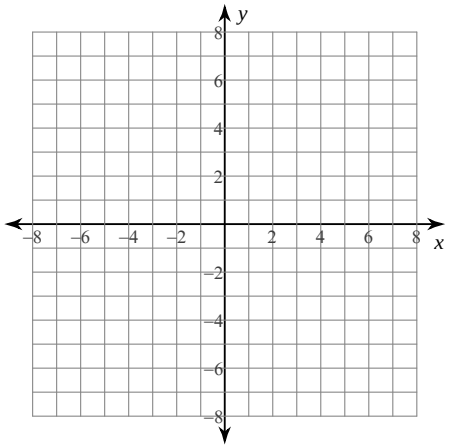
827) $4x^2 + 4y^2 - 20x + 16y - 23 = 0$



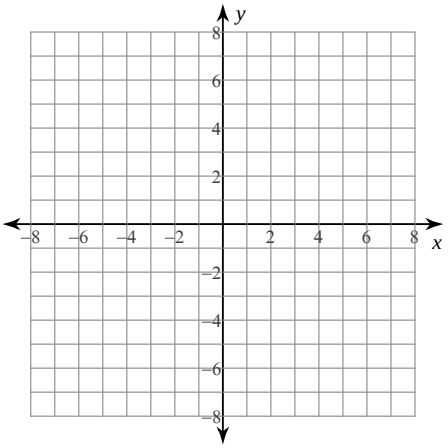
828) $5x^2 + 8y + 32 = 0$



829) $x^2 - y^2 - 6x + 2y + 7 = 0$

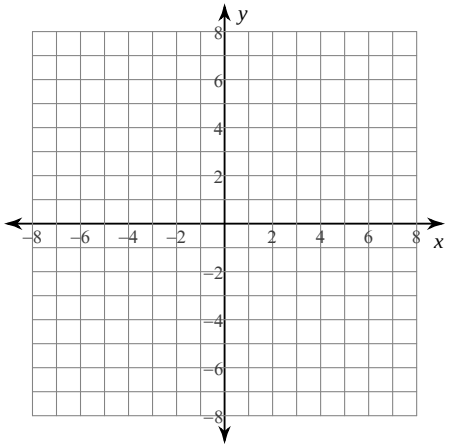


830) $4x^2 + y^2 - 8x + 2y - 31 = 0$

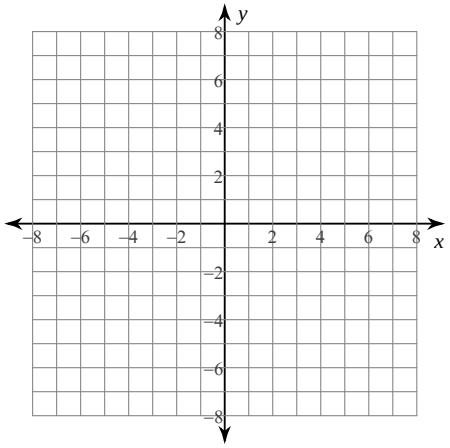


Identify the vertices and foci of each. Then sketch the graph.

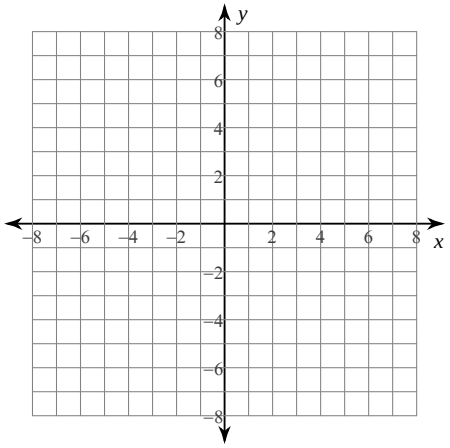
831) $\frac{(x-5)^2}{4}+\frac{(y-1)^2}{16}=1$



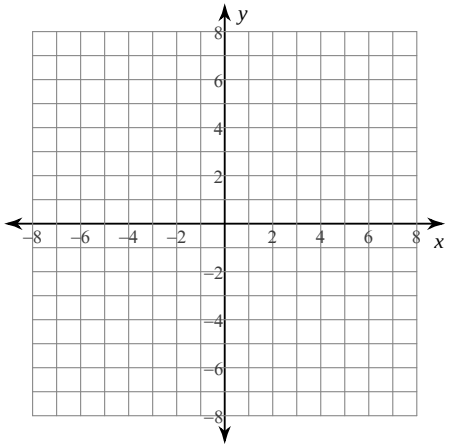
832) $\frac{(x+2)^2}{16}+\frac{y^2}{49}=1$



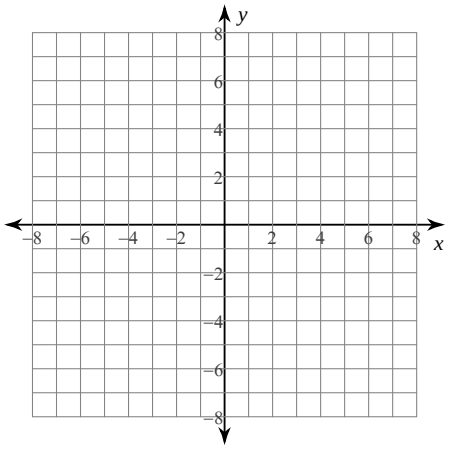
833) $\frac{(x+1)^2}{9}+\frac{(y-3)^2}{16}=1$



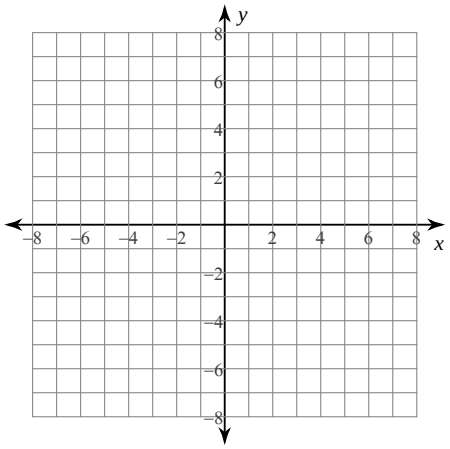
834) $\frac{(x+3)^2}{16}+\frac{y^2}{36}=1$



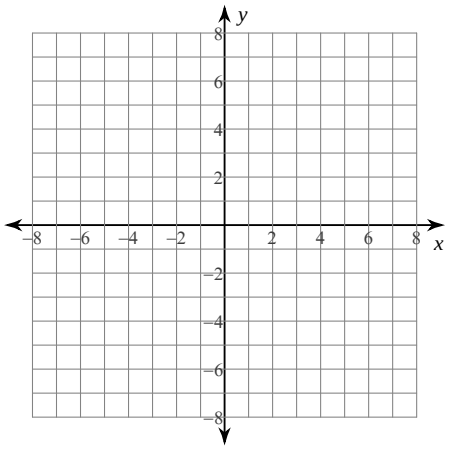
835) $\frac{(x+2)^2}{9}+\frac{(y-1)^2}{36}=1$



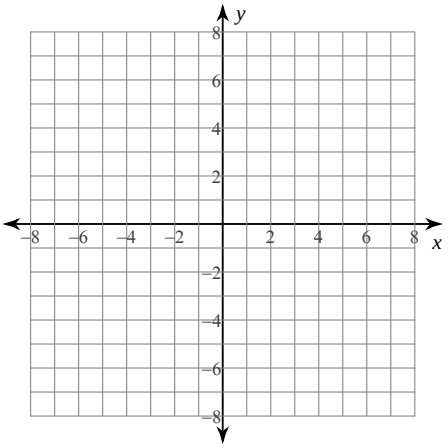
836) $\frac{(x+1)^2}{9}+\frac{y^2}{49}=1$



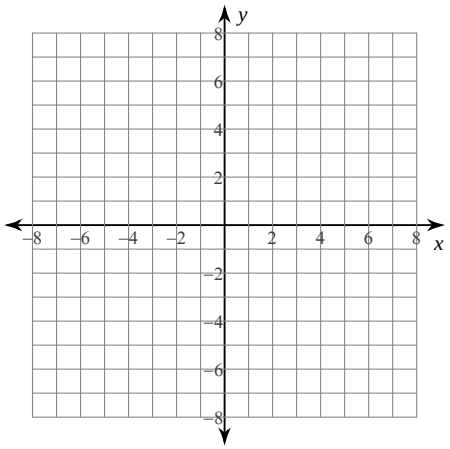
837) $\dfrac{(x+2)^2}{4} + \dfrac{\left(y-\frac{5}{2}\right)^2}{9} = 1$



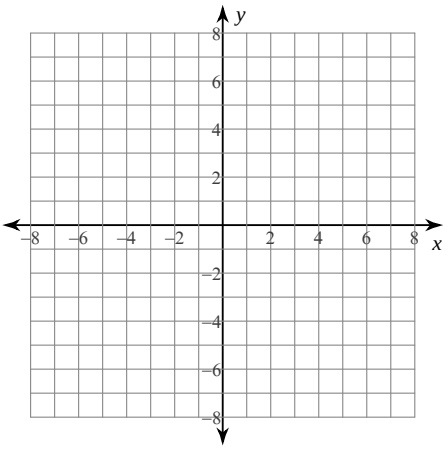
838) $\dfrac{(x-5)^2}{4} + \dfrac{y^2}{49} = 1$



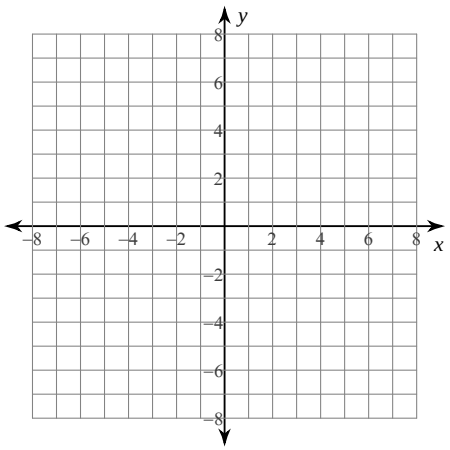
839) $\dfrac{(x-4)^2}{4} + \dfrac{(y-2)^2}{16} = 1$



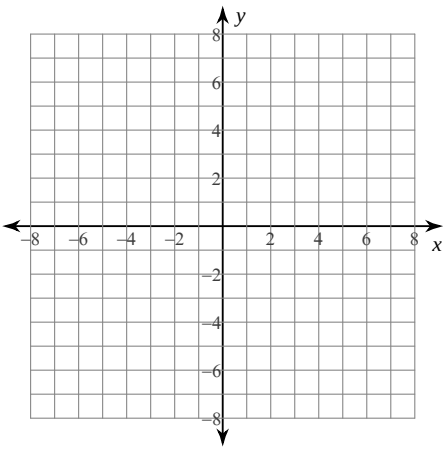
840) $\dfrac{(x-4)^2}{4} + \dfrac{y^2}{49} = 1$



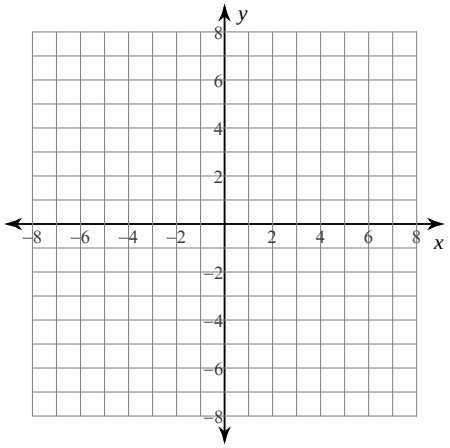
841) $\dfrac{(x-1)^2}{9} - \dfrac{(y+1)^2}{16} = 1$



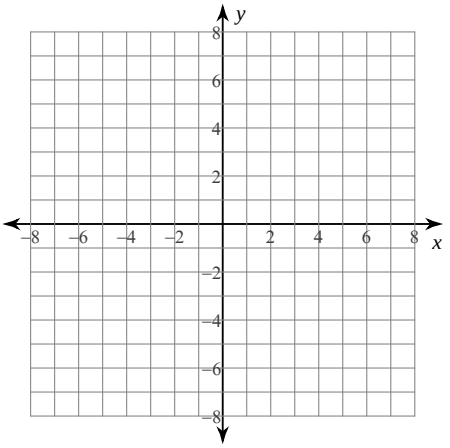
842) $\dfrac{x^2}{16} - \dfrac{(y-1)^2}{16} = 1$



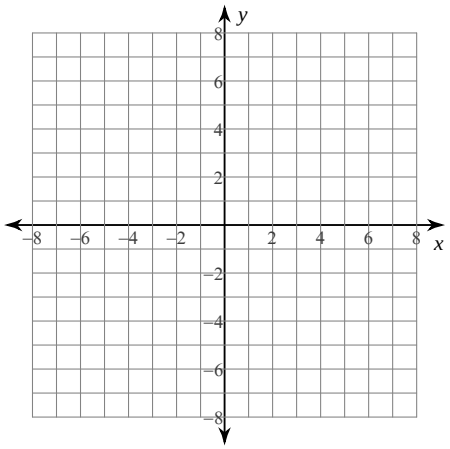
843) $\frac{(x+1)^2}{16} - \frac{y^2}{25} = 1$



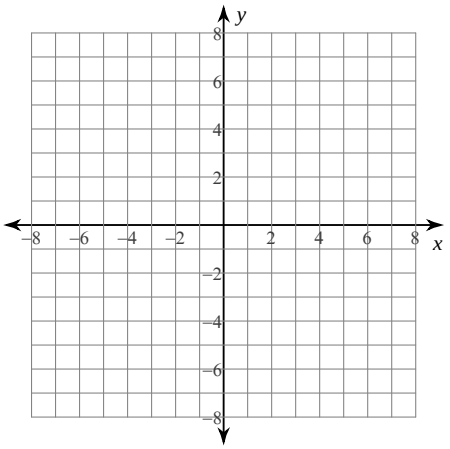
844) $\frac{x^2}{25} - \frac{y^2}{16} = 1$



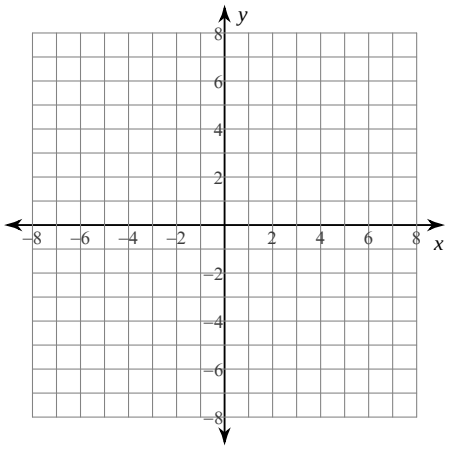
845) $\frac{x^2}{25} - \frac{(y+1)^2}{15} = 1$



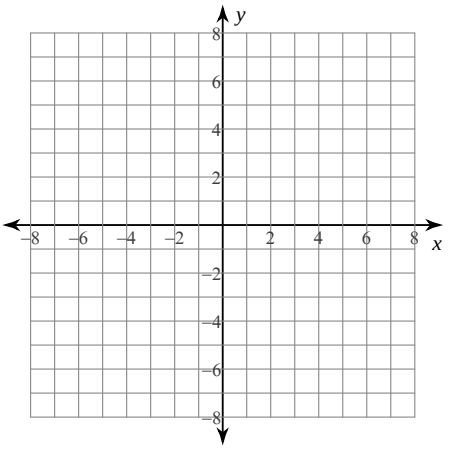
846) $(x-4)^2 - \frac{(y+1)^2}{16} = 1$



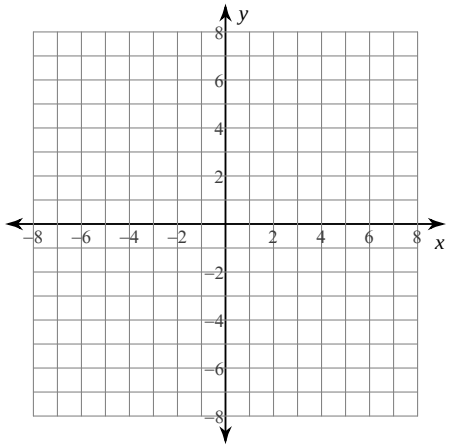
847) $\frac{x^2}{25} - \frac{y^2}{9} = 1$



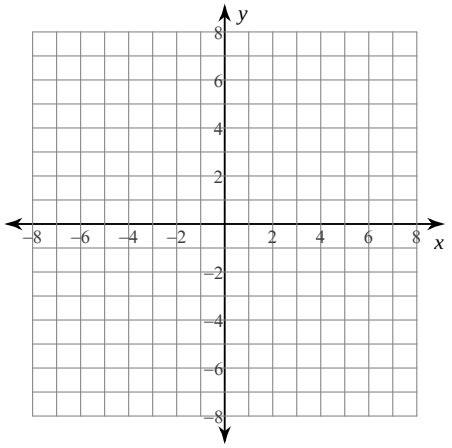
848) $\frac{x^2}{25} - \frac{(y-2)^2}{4} = 1$



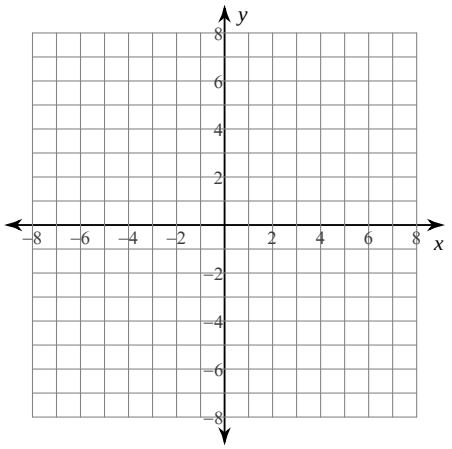
849) $(x-2)^2 - \frac{(y+2)^2}{4} = 1$



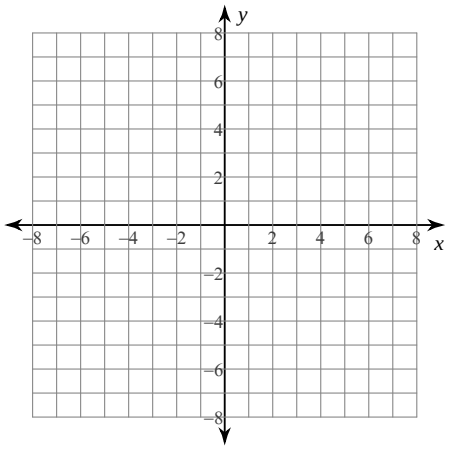
850) $\frac{x^2}{25} - \frac{(y+1)^2}{9} = 1$



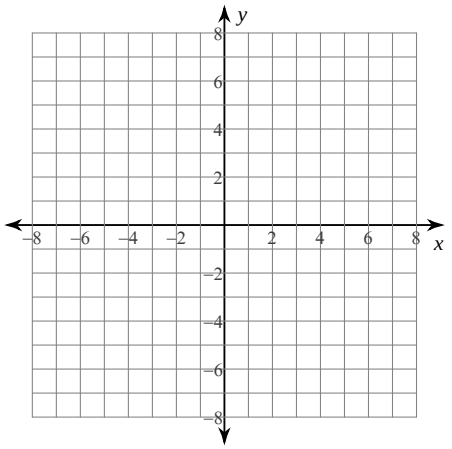
851) $\frac{x^2}{49} + \frac{(y-4)^2}{4} = 1$



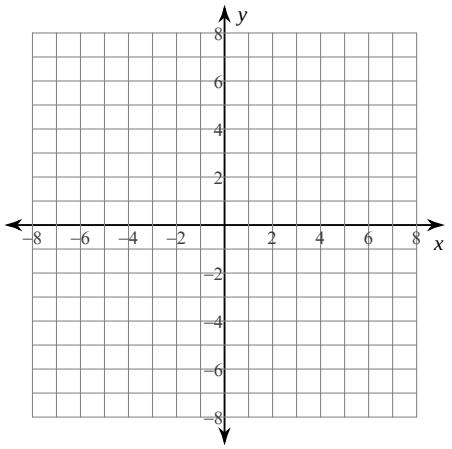
852) $\frac{x^2}{45} + \frac{(y-1)^2}{25} = 1$



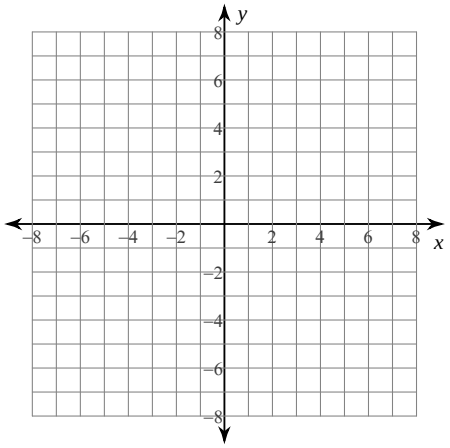
853) $\frac{(x+1)^2}{16} + (y-3)^2 = 1$



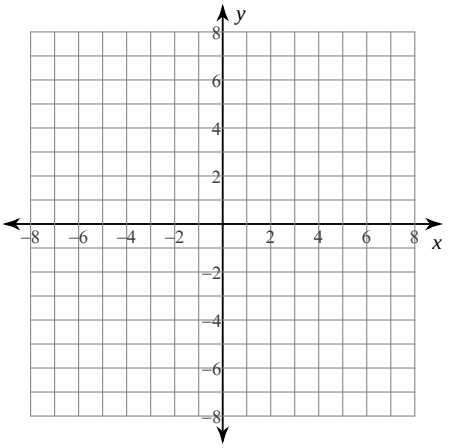
854) $\frac{x^2}{49} + (y+4)^2 = 1$



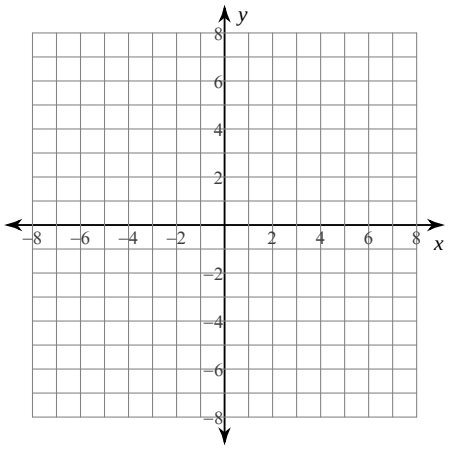
855) $\frac{(x+2)^2}{16} + (y-1)^2 = 1$



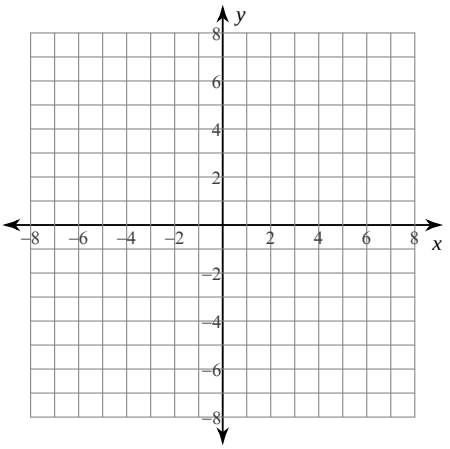
856) $\frac{x^2}{49} + \frac{y^2}{16} = 1$



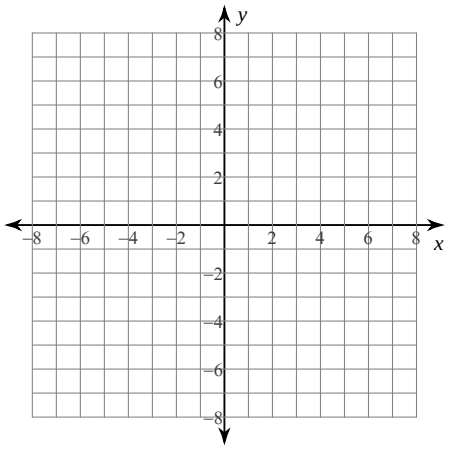
857) $\frac{x^2}{45} + \frac{y^2}{35} = 1$



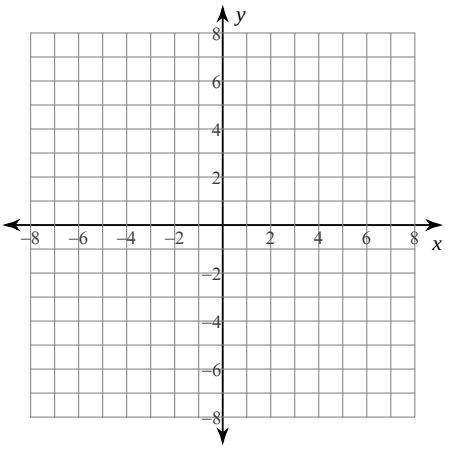
858) $\frac{x^2}{40} + \frac{y^2}{20} = 1$



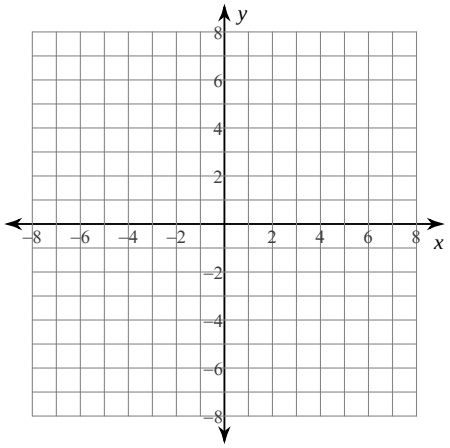
859) $\frac{x^2}{36} + (y-3)^2 = 1$



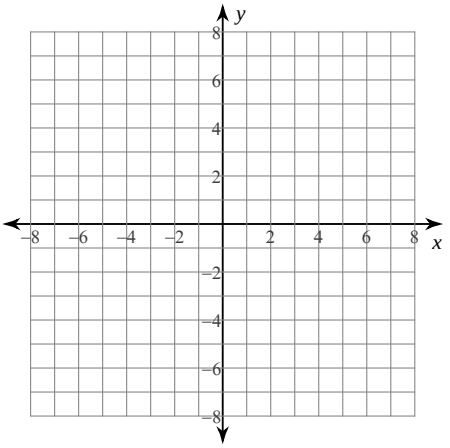
860) $\frac{x^2}{36} + \frac{y^2}{16} = 1$



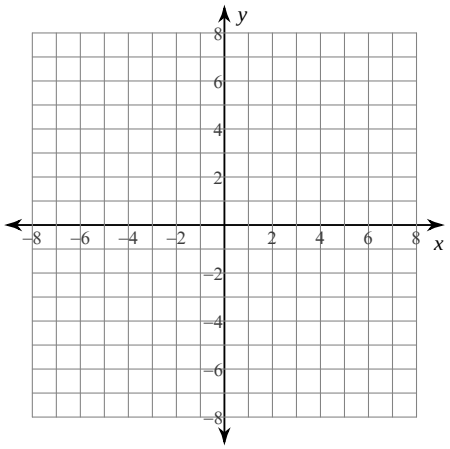
861) $\frac{(x-1)^2}{36} + (y-5)^2 = 1$



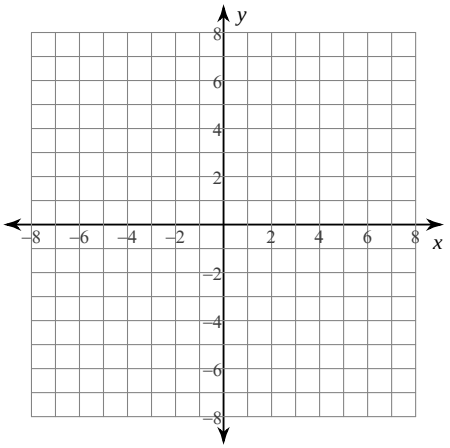
862) $\frac{(x+1)^2}{36} + \frac{(y-1)^2}{16} = 1$



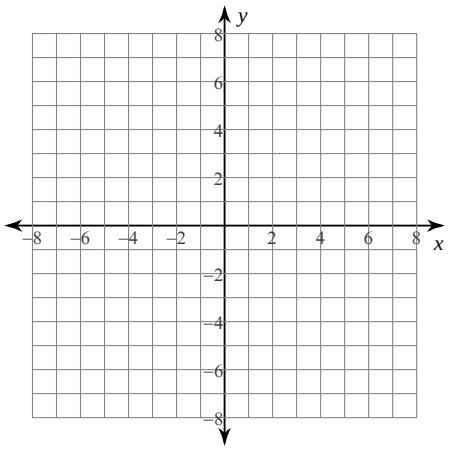
863) $\frac{(x-2)^2}{16} + (y-3)^2 = 1$



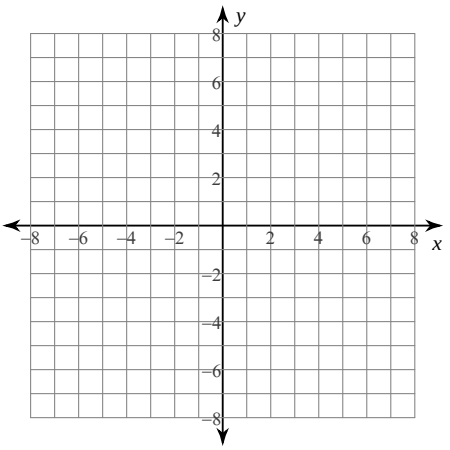
864) $\frac{(x-1)^2}{25} + \left(y - \frac{9}{2}\right)^2 = 1$



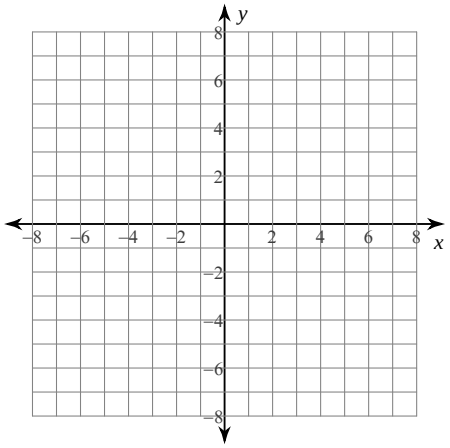
865) $\frac{(x-2)^2}{20} + \frac{y^2}{25} = 1$



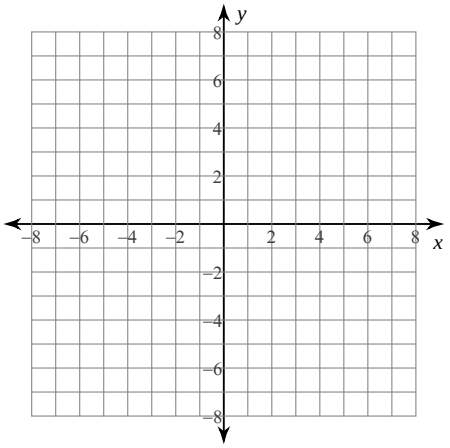
866) $\frac{(x-2)^2}{4} + \frac{(y+3)^2}{9} = 1$



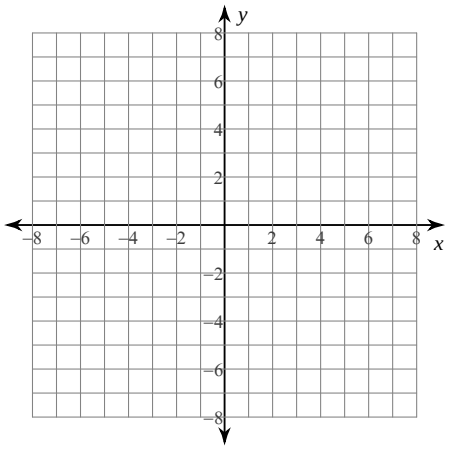
867) $\frac{x^2}{16} + \frac{(y-2)^2}{25} = 1$



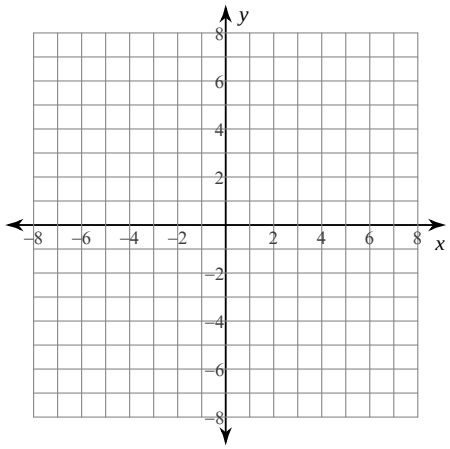
868) $x^2 + \frac{(y-3)^2}{9} = 1$



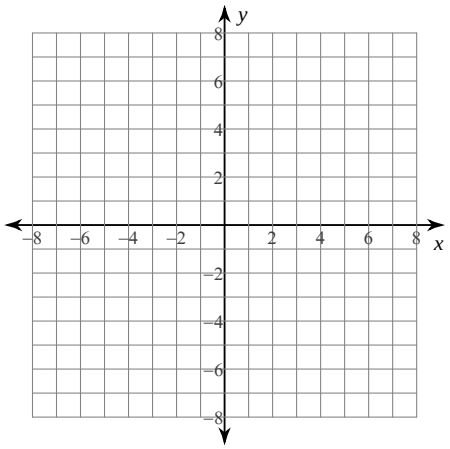
869) $\frac{(x+1)^2}{9} + \frac{(y-1)^2}{36} = 1$



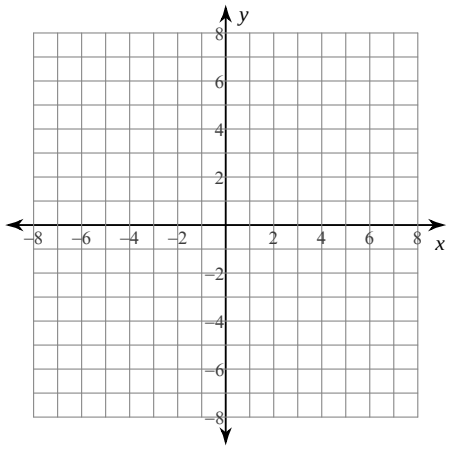
870) $\frac{x^2}{4} + \frac{(y-1)^2}{9} = 1$



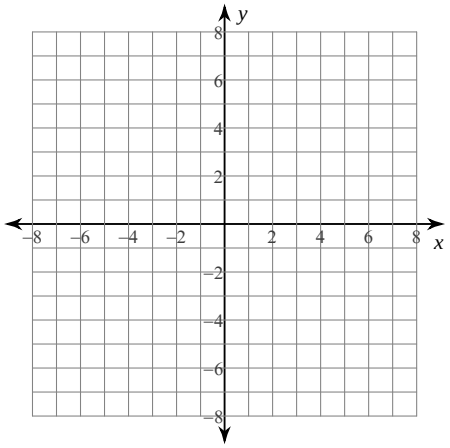
871) $\frac{(x+1)^2}{35} + \frac{y^2}{25} = 1$



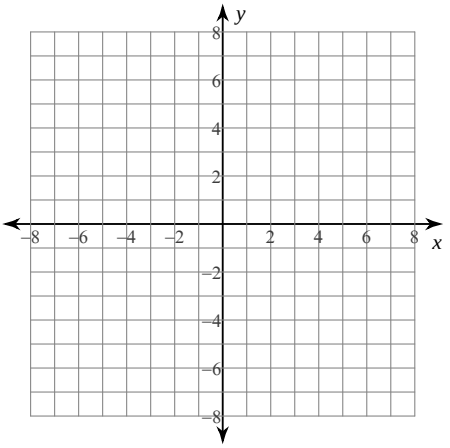
872) $\frac{(x+1)^2}{36} + \frac{(y+2)^2}{9} = 1$



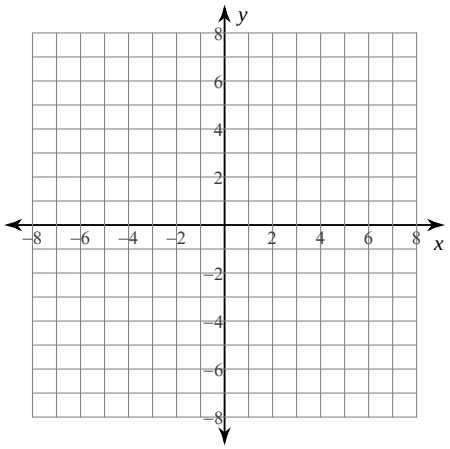
873) $\frac{(x+1)^2}{36} + \frac{(y+4)^2}{9} = 1$



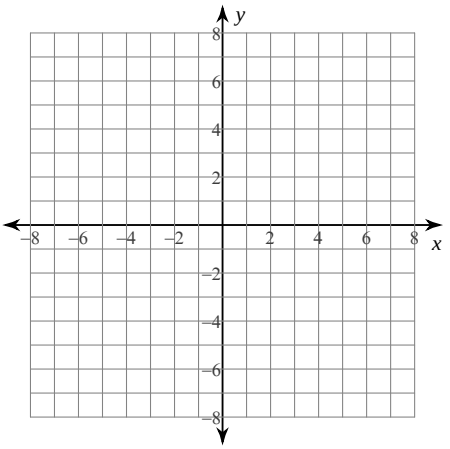
874) $\frac{(x+1)^2}{36} + \frac{(y-1)^2}{9} = 1$



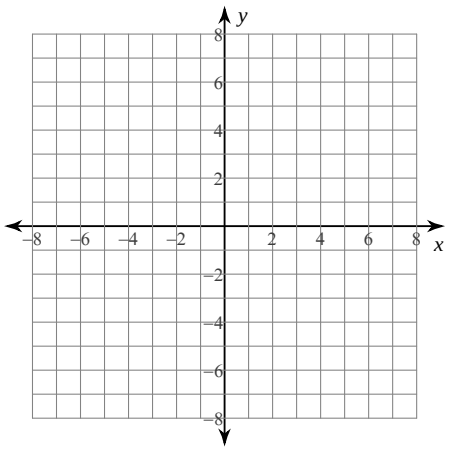
875) $\frac{(x+1)^2}{30} + \frac{(y+1)^2}{20} = 1$



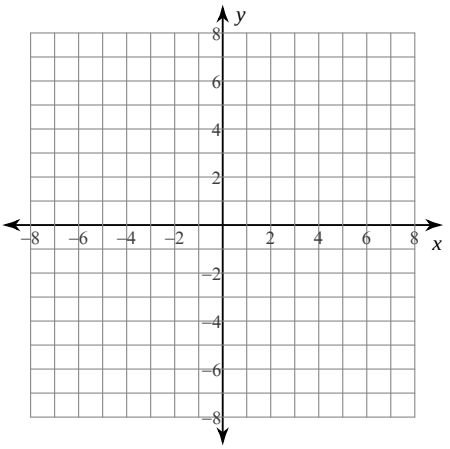
876) $\frac{(x+1)^2}{9} + (y-2)^2 = 1$



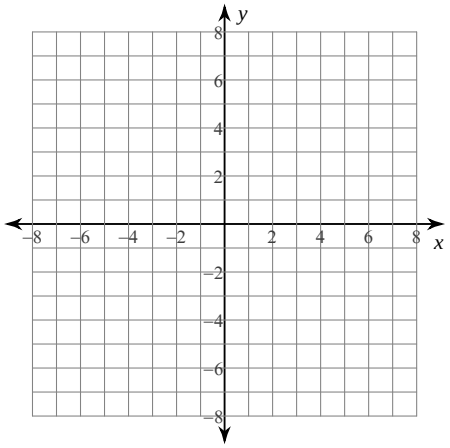
877) $\frac{\left(x+\frac{3}{2}\right)^2}{9} + \frac{\left(y+\frac{9}{2}\right)^2}{4} = 1$



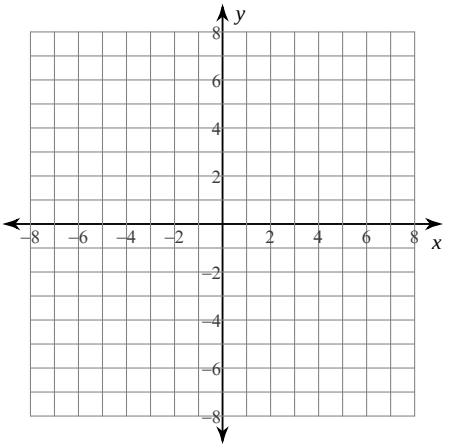
878) $\frac{(x+3)^2}{16} + y^2 = 1$



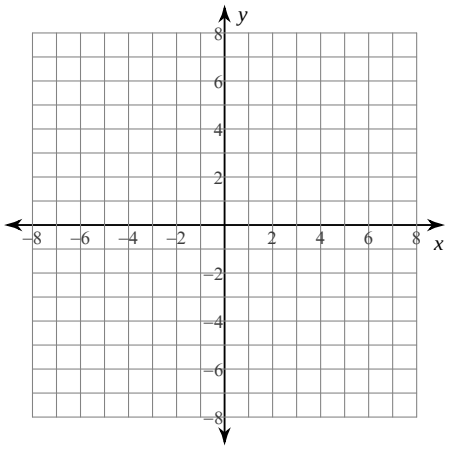
879) $\frac{x^2}{49} + \frac{(y+1)^2}{36} = 1$



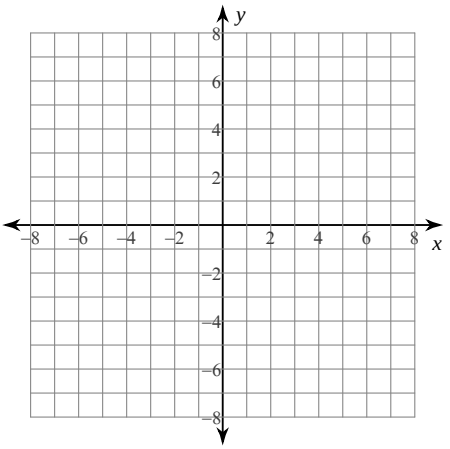
880) $\frac{x^2}{49} + (y-2)^2 = 1$



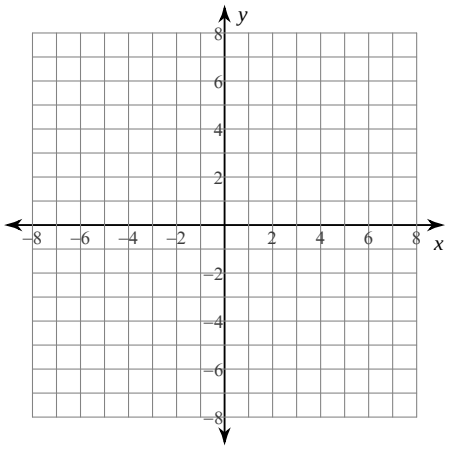
881) $\frac{y^2}{25} - \frac{(x+2)^2}{4} = 1$



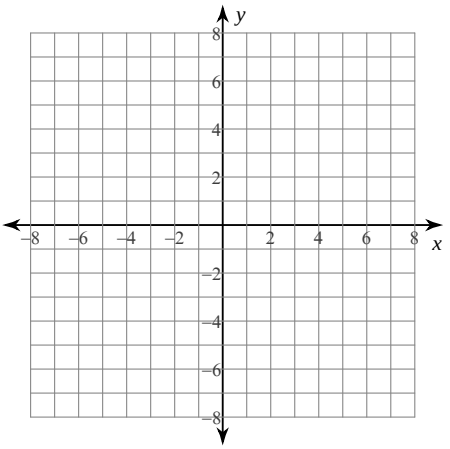
882) $\frac{y^2}{25} - \frac{(x+1)^2}{9} = 1$



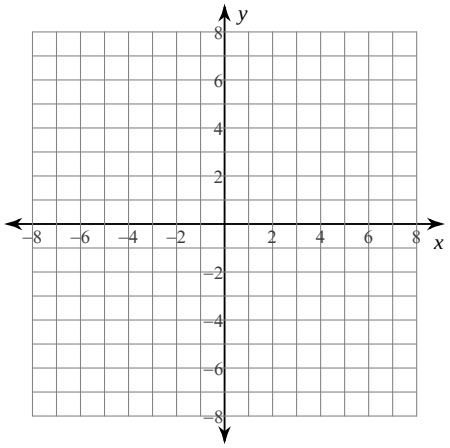
883) $\frac{y^2}{16} - \frac{(x-1)^2}{16} = 1$



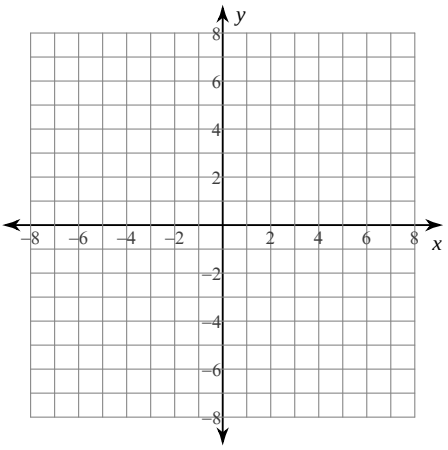
884) $\frac{y^2}{16} - \frac{(x+1)^2}{16} = 1$



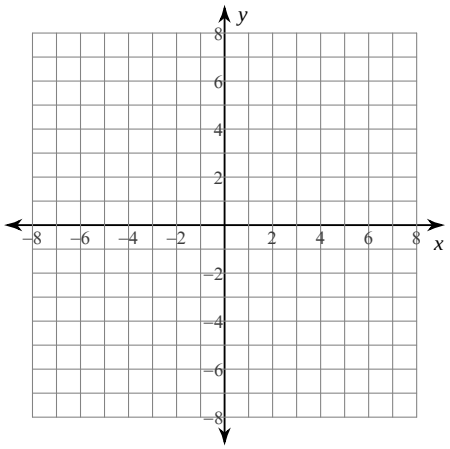
885) $\frac{(x+2)^2}{9} - \frac{y^2}{25} = 1$



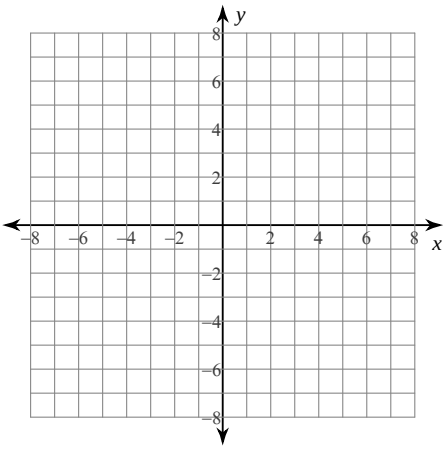
886) $\frac{\left(y+\frac{1}{2}\right)^2}{16} - \frac{(x+1)^2}{9} = 1$



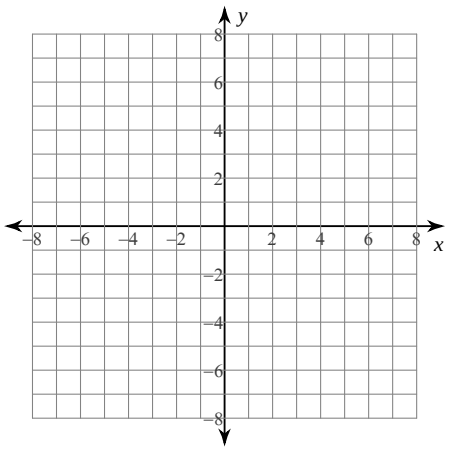
887) $\frac{x^2}{20} - \frac{(y-1)^2}{15} = 1$



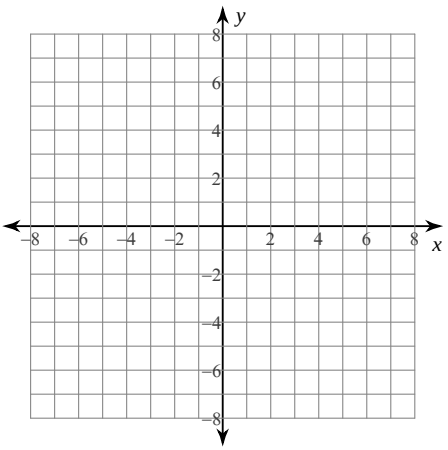
888) $\frac{x^2}{25} - \frac{(y-1)^2}{16} = 1$



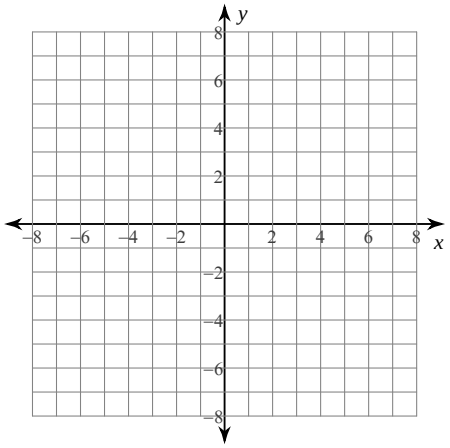
889) $\frac{x^2}{25} - \frac{y^2}{9} = 1$



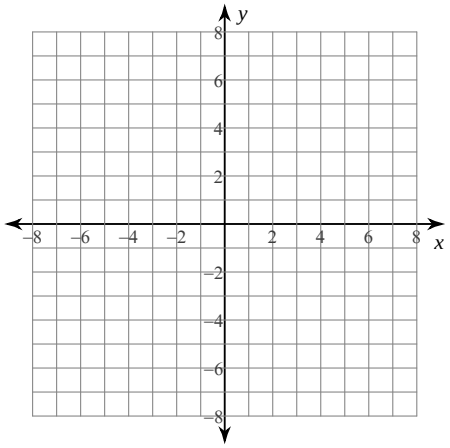
890) $\frac{x^2}{16} - \frac{(y-1)^2}{16} = 1$



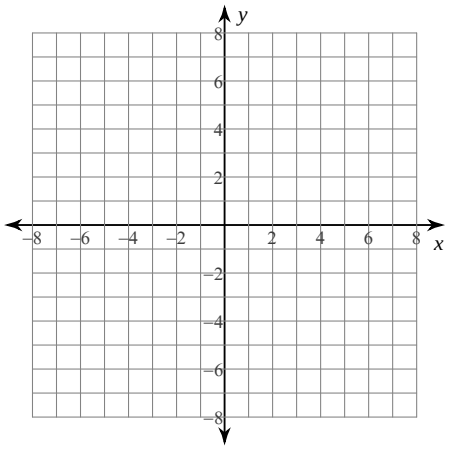
891) $\frac{(y-2)^2}{9} - \frac{(x-2)^2}{4} = 1$



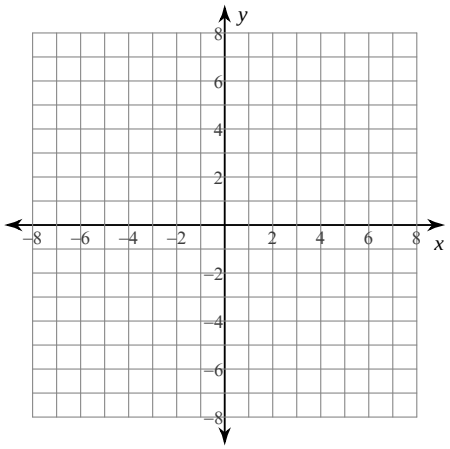
892) $\frac{y^2}{5} - \frac{(x+1)^2}{15} = 1$



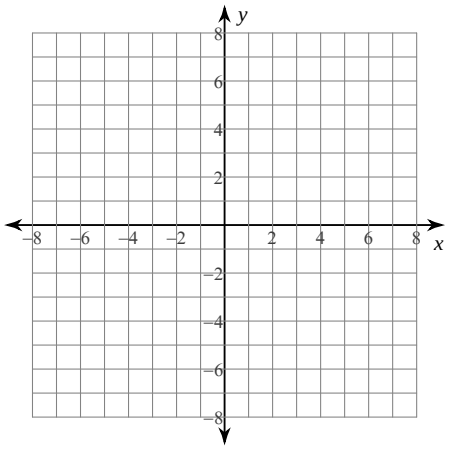
893) $\frac{(y+1)^2}{10} - \frac{x^2}{15} = 1$



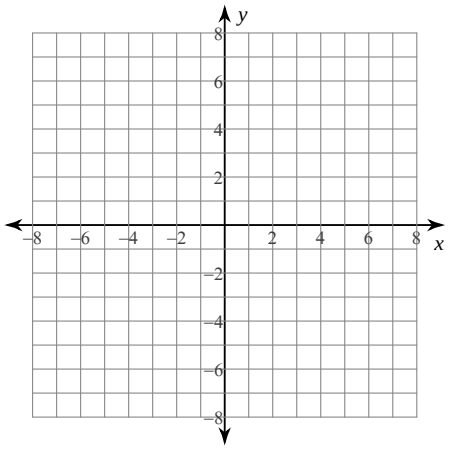
894) $y^2 - \frac{x^2}{4} = 1$



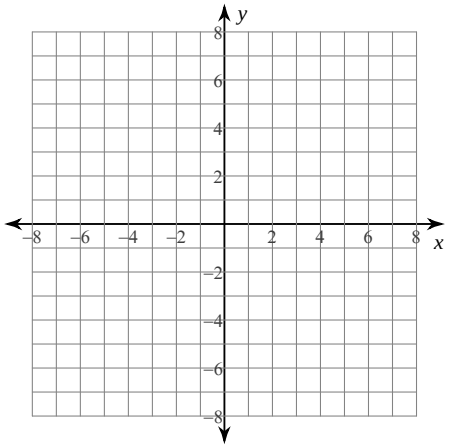
895) $\frac{y^2}{25} - \frac{(x-2)^2}{9} = 1$



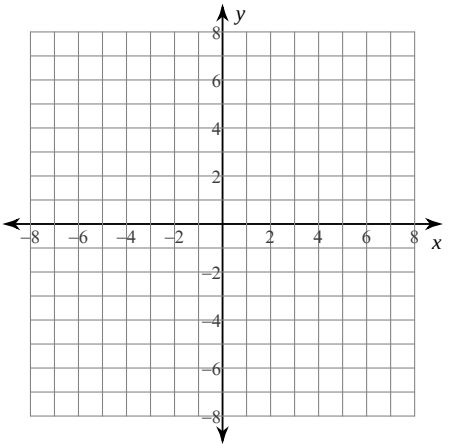
896) $\frac{y^2}{25} - \frac{x^2}{16} = 1$



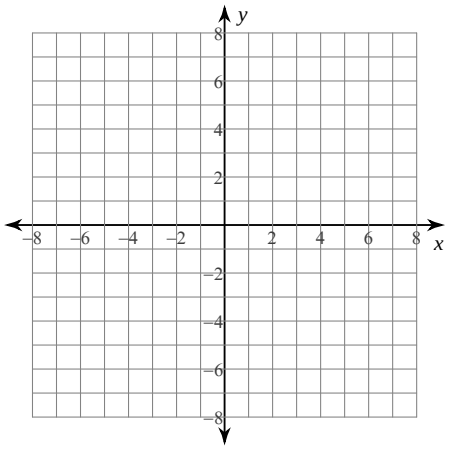
897) $\frac{x^2}{25} - (y+1)^2 = 1$



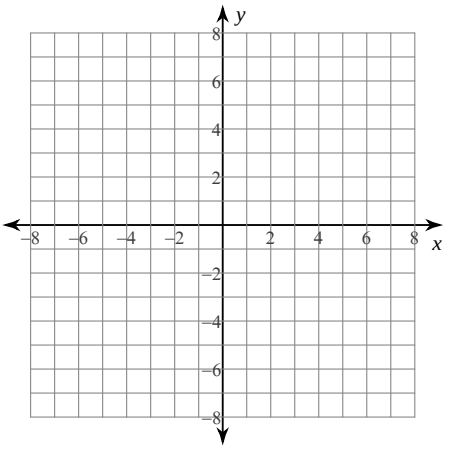
898) $\frac{(x+1)^2}{16} - (y-3)^2 = 1$



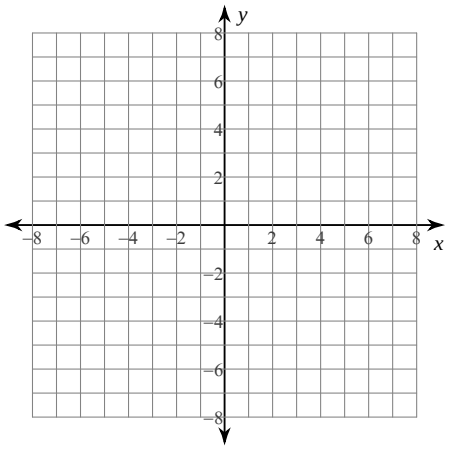
899) $\frac{x^2}{25} - \frac{y^2}{20} = 1$



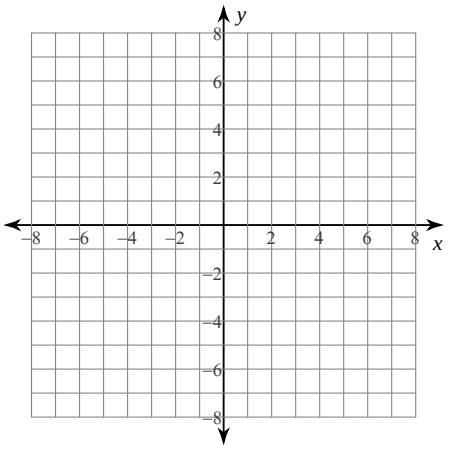
900) $\frac{(x-1)^2}{16} - \frac{y^2}{25} = 1$



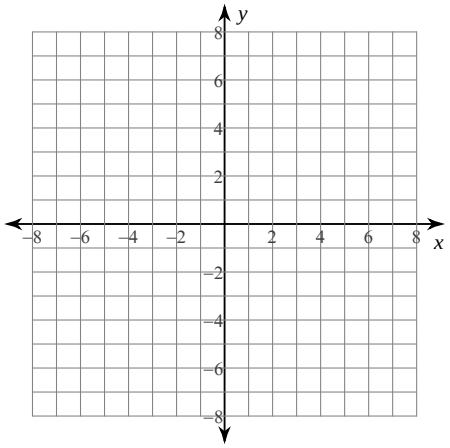
901) $\frac{x^2}{25} - \frac{y^2}{25} = 1$



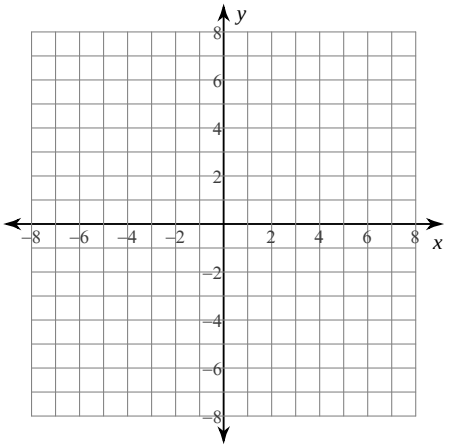
902) $(x+2)^2 - \frac{(y+1)^2}{9} = 1$



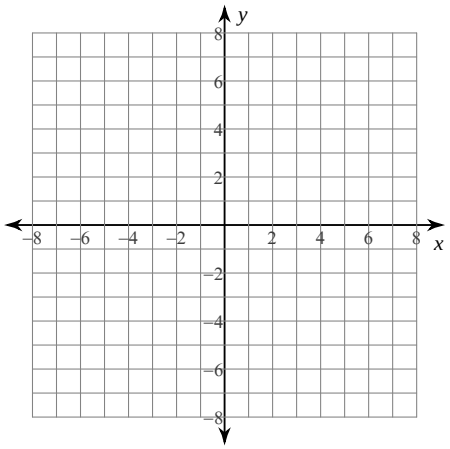
903) $\frac{x^2}{25} - \frac{(y+1)^2}{16} = 1$



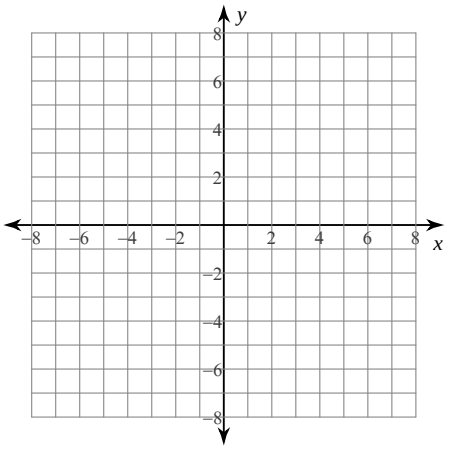
904) $(x-4)^2 - \frac{(y-1)^2}{16} = 1$



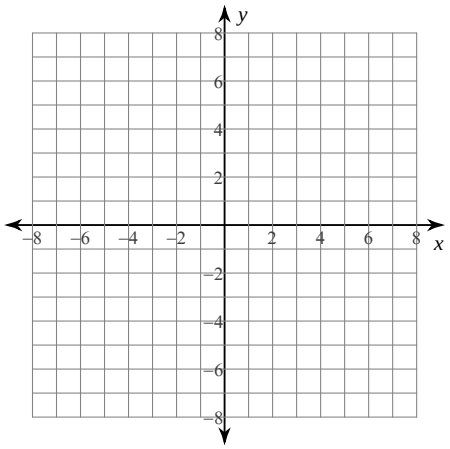
905) $\frac{x^2}{25} - \frac{(y-1)^2}{16} = 1$



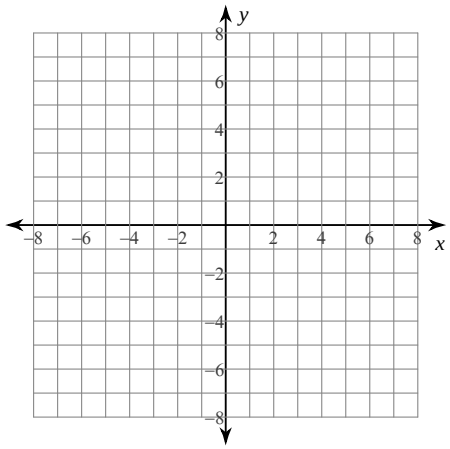
906) $x^2 - \frac{(y-1)^2}{9} = 1$



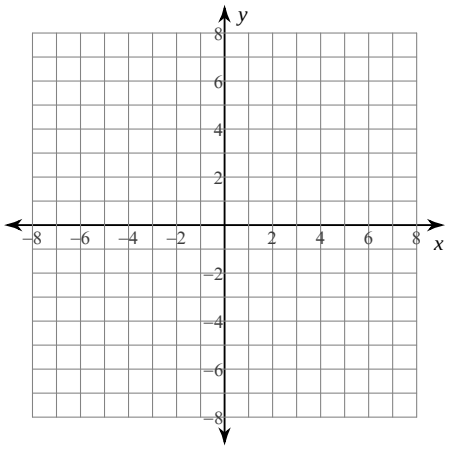
907) $\frac{x^2}{9} - \frac{(y+2)^2}{9} = 1$



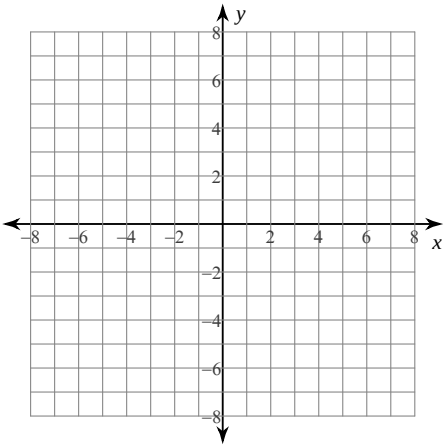
908) $\frac{x^2}{9} - \frac{(y-2)^2}{4} = 1$



909) $\dfrac{\left(x+\frac{3}{2}\right)^2}{4} - \dfrac{(y+2)^2}{9} = 1$



910) $\dfrac{x^2}{4} - \dfrac{(y+1)^2}{4} = 1$



Use the information provided to write the standard form equation of each ellipse.

911) Vertices: $(-4, 21), (-4, -7)$
Foci: $(-4, 7+\sqrt{115}), (-4, 7-\sqrt{115})$

912) Vertices: $(4, 6), (4, -4)$
Foci: $(4, 1+\sqrt{21}), (4, 1-\sqrt{21})$

913) Vertices: $\left(\frac{5}{2}, 3\right), \left(\frac{5}{2}, -19\right)$
Foci: $\left(\frac{5}{2}, -8+\sqrt{57}\right), \left(\frac{5}{2}, -8-\sqrt{57}\right)$

914) Vertices: $(9, 13), (9, -5)$
Foci: $(9, 4+3\sqrt{5}), (9, 4-3\sqrt{5})$

915) Vertices: $(1, 7), (-21, 7)$
Foci: $(-10+6\sqrt{2}, 7), (-10-6\sqrt{2}, 7)$

916) Vertices: $(-8, 18), (-8, -2)$
Foci: $(-8, 8+2\sqrt{21}), (-8, 8-2\sqrt{21})$

917) Vertices: $(6, -10), (-12, -10)$
Foci: $(-3+\sqrt{77}, -10), (-3-\sqrt{77}, -10)$

918) Vertices: $(6+5\sqrt{7}, 6), (6-5\sqrt{7}, 6)$
Foci: $(6+\sqrt{35}, 6), (6-\sqrt{35}, 6)$

919) Vertices: $(5+\sqrt{145}, -6), (5-\sqrt{145}, -6)$
Foci: $(5+2\sqrt{5}, -6), (5-2\sqrt{5}, -6)$

920) Vertices: $(19, -7), (-1, -7)$
Foci: $(9+5\sqrt{3}, -7), (9-5\sqrt{3}, -7)$

921) Vertices: $(-2, 2), (-2, -14)$
Foci: $(-2, -6+\sqrt{15}), (-2, -6-\sqrt{15})$

922) Vertices: $(6, 3), (6, -9)$
Foci: $(6, -3+\sqrt{35}), (6, -3-\sqrt{35})$

923) Vertices: $(-10, 6), (-10, -6)$
Foci: $(-10, 2\sqrt{5}), (-10, -2\sqrt{5})$

924) Vertices: $(2, -10+2\sqrt{10}), (2, -10-2\sqrt{10})$
Foci: $(2, -10+\sqrt{15}), (2, -10-\sqrt{15})$

925) Vertices: $(-6, 9), (-6, -3)$
Foci: $(-6, 3+3\sqrt{3}), (-6, 3-3\sqrt{3})$

926) Vertices: $(7, 13), (7, -11)$
Foci: $(7, 1+2\sqrt{11}), (7, 1-2\sqrt{11})$

927) Vertices: $\left(\frac{15}{2}, 13\right), \left(\frac{15}{2}, 1\right)$
Foci: $\left(\frac{15}{2}, 7+4\sqrt{2}\right), \left(\frac{15}{2}, 7-4\sqrt{2}\right)$

928) Vertices: $(-10, 17), (-10, -9)$
Foci: $(-10, 4+2\sqrt{22}), (-10, 4-2\sqrt{22})$

929) Vertices: $(3, 15), (3, 5)$
Foci: $(3, 14), (3, 6)$

930) Vertices: $(8, 7), (-18, 7)$
Foci: $(-5+4\sqrt{3}, 7), (-5-4\sqrt{3}, 7)$

Use the information provided to write the standard form equation of each hyperbola.

931) Vertices: $(-7, 5), (-7, -11)$
Endpoints of Conjugate Axis: $(-2, -3)$
$(-12, -3)$

932) Vertices: $(9, -9), (-5, -9)$
Endpoints of Conjugate Axis: $(2, 2)$
$(2, -20)$

933) Vertices: $(-2, 9), (-2, -9)$
Endpoints of Conjugate Axis: $(2, 0)$
$(-6, 0)$

934) Vertices: $(-10, 7), (-10, -13)$
Endpoints of Conjugate Axis: $(-1, -3)$
$(-19, -3)$

935) Vertices: $(2, 10), (2, -4)$
Endpoints of Conjugate Axis: $(10, 3)$
$(-6, 3)$

936) Vertices: $\left(\frac{1}{2}, \frac{25}{2}\right), \left(\frac{1}{2}, -\frac{15}{2}\right)$
Endpoints of Conjugate Axis: $\left(\frac{25}{2}, \frac{5}{2}\right)$
$\left(-\frac{23}{2}, \frac{5}{2}\right)$

937) Vertices: $(-6, 12), (-6, -10)$
Endpoints of Conjugate Axis: $(2, 1)$
$(-14, 1)$

938) Vertices: $(-2, 17), (-2, -9)$
Endpoints of Conjugate Axis: $(9, 4)$
$(-13, 4)$

939) Vertices: $(7, 12), (7, 0)$
Endpoints of Conjugate Axis: $(13, 6)$
$(1, 6)$

940) Vertices: $(-10, 16), (-10, 2)$
Endpoints of Conjugate Axis: $(-5, 9)$
$(-15, 9)$

941) Vertices: $(1, 10), (1, -6)$
Endpoints of Conjugate Axis: $(12, 2)$
$(-10, 2)$

942) Vertices: $(16, -6), (4, -6)$
Endpoints of Conjugate Axis: $(10, 9)$
$(10, -21)$

943) Vertices: $(-7, 3), (-7, -9)$
Endpoints of Conjugate Axis: $(1, -3)$
$(-15, -3)$

944) Vertices: $(6, 11), (6, -5)$
Endpoints of Conjugate Axis: $(7, 3)$
$(5, 3)$

945) Vertices: $(-2, 4), (-2, -4)$
Endpoints of Conjugate Axis: $(6, 0)$
$(-10, 0)$

946) Vertices: $(10, 18), (10, -6)$
Endpoints of Conjugate Axis: $(15, 6)$
$(5, 6)$

947) Vertices: $(2, 7), (2, 1)$
Endpoints of Conjugate Axis: $(12, 4)$
$(-8, 4)$

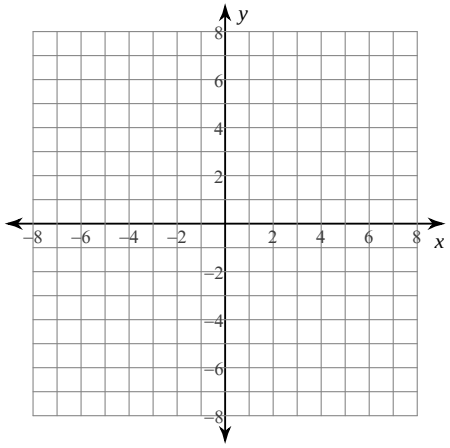
948) Vertices: $(-7, 5), (-7, -15)$
Endpoints of Conjugate Axis: $(-3, -5)$
$(-11, -5)$

949) Vertices: $(7, 10), (7, 4)$
Endpoints of Conjugate Axis: $(16, 7)$
$(-2, 7)$

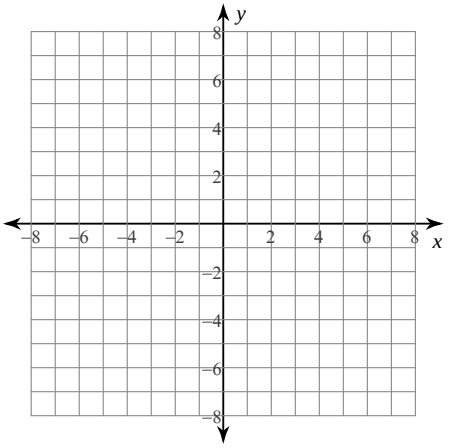
950) Vertices: $(-2, 2), (-2, -20)$
Endpoints of Conjugate Axis: $(4, -9)$
$(-8, -9)$

Identify the vertex and axis of symmetry of each. Then sketch the graph.

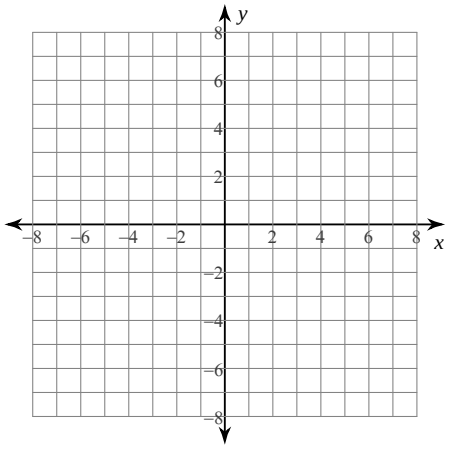
951) $y = 2x^2 + 24x + 67$



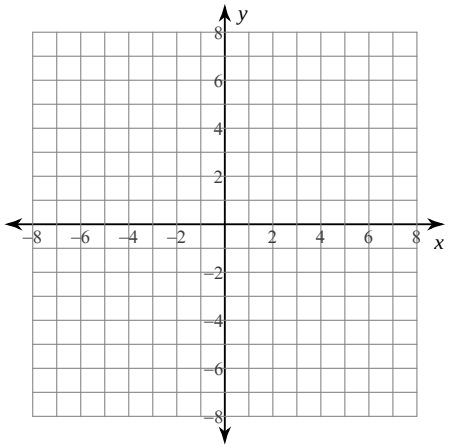
952) $y = x^2 + 8x + 13$



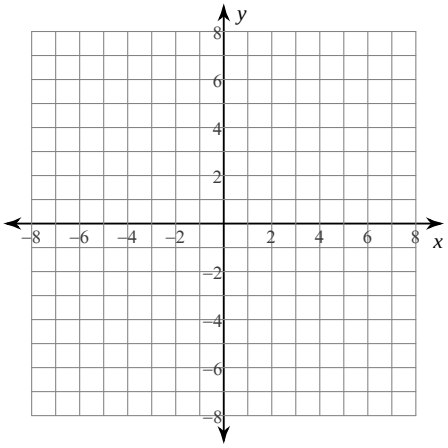
953) $y = -x^2 + 12x - 38$



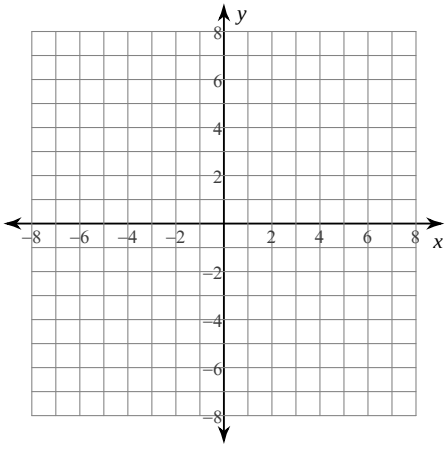
954) $y = -\frac{4}{5}x^2 - \frac{8}{5}x - \frac{24}{5}$



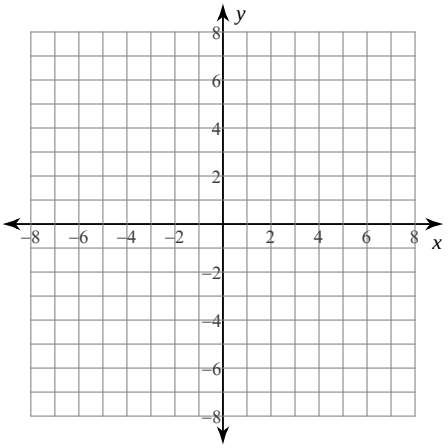
955) $y = x^2 + 4x$



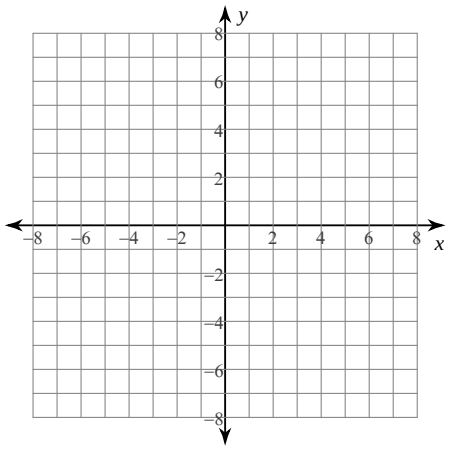
956) $y = -\frac{2}{5}x^2 + 1$



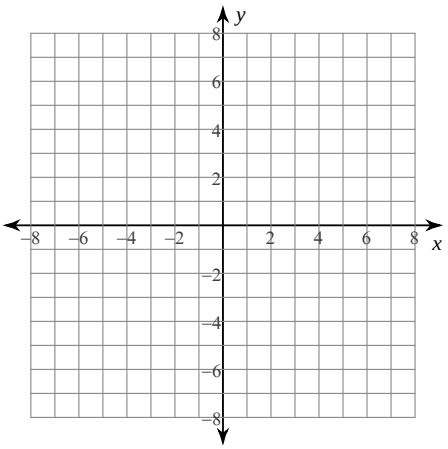
957) $y = -2x^2 + 12x - 19$



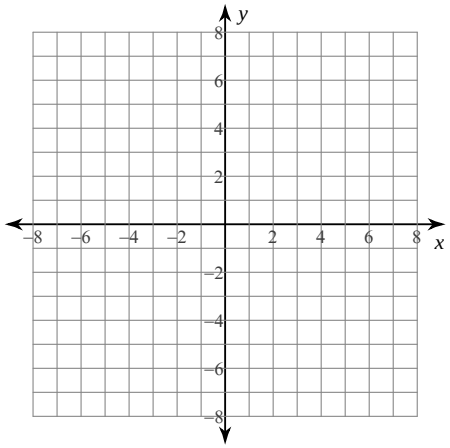
958) $y = 2x^2 + 8x + 2$



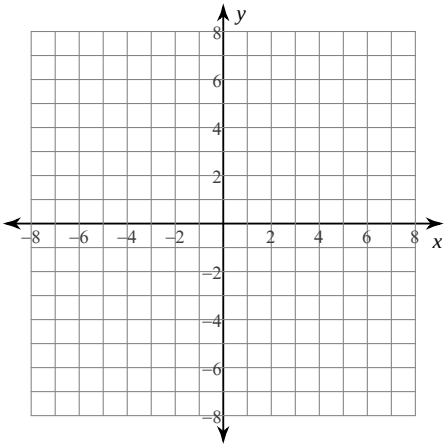
959) $y = -x^2 + 2x + 1$



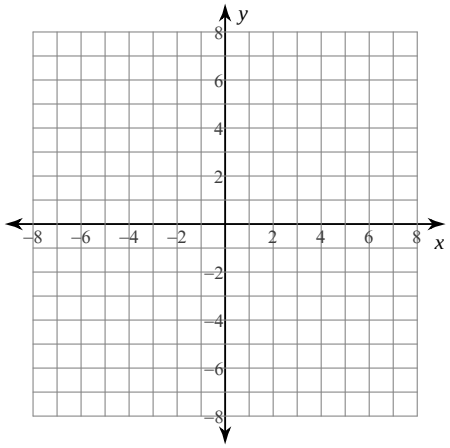
960) $y = \frac{1}{2}x^2 - 5x + \frac{13}{2}$



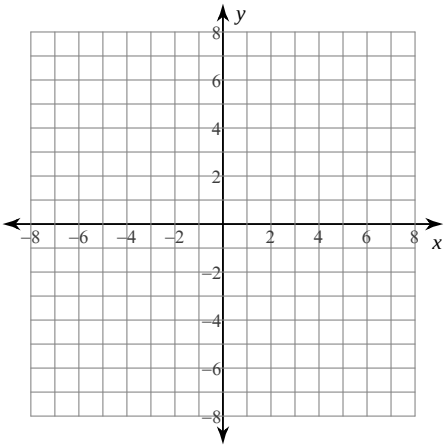
961) $y = x^2 + 6x + 11$



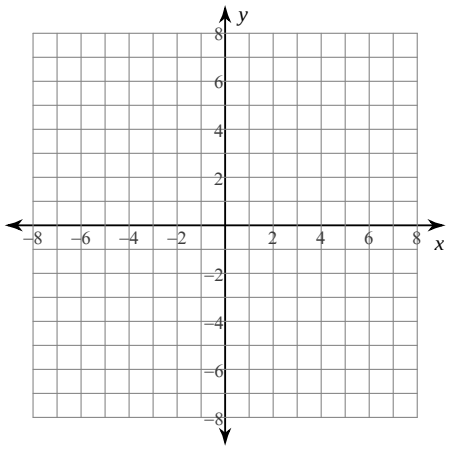
962) $y = 2x^2 - 8x + 3$



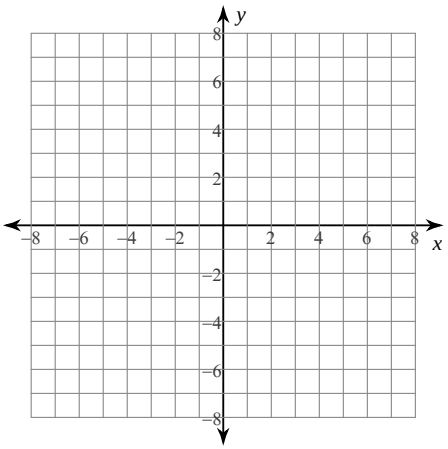
963) $y = -x^2 + 2x + 1$



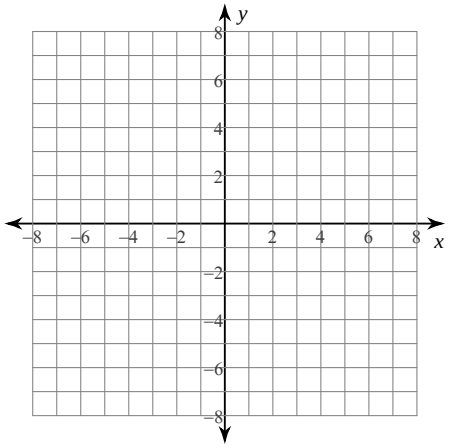
964) $y = \frac{1}{2}x^2 - 3x + \frac{1}{2}$



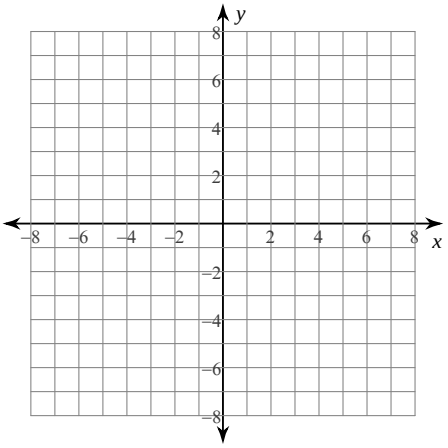
965) $y = \frac{1}{2}x^2 - 4x + 7$



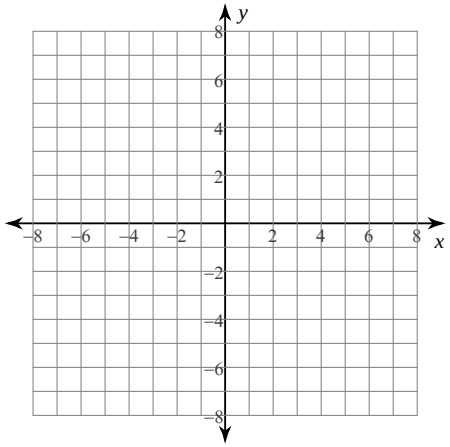
966) $y = -x^2 - 6x - 15$



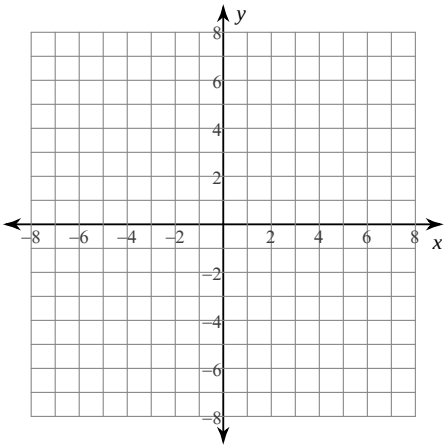
967) $y = -x^2 + 10x - 24$



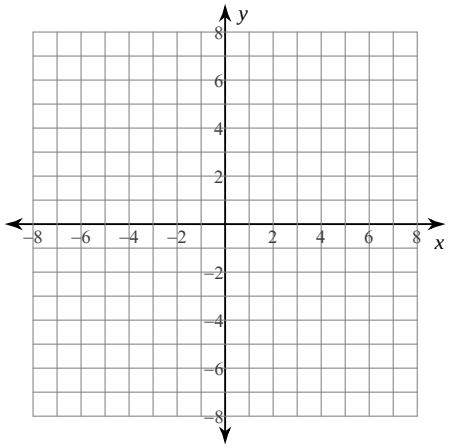
968) $y = 2x^2 + 8x + 7$



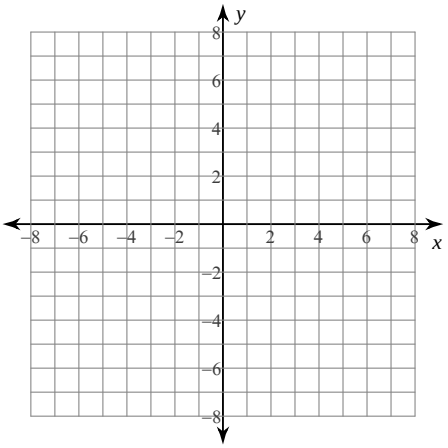
969) $y = x^2 - 10x + 28$



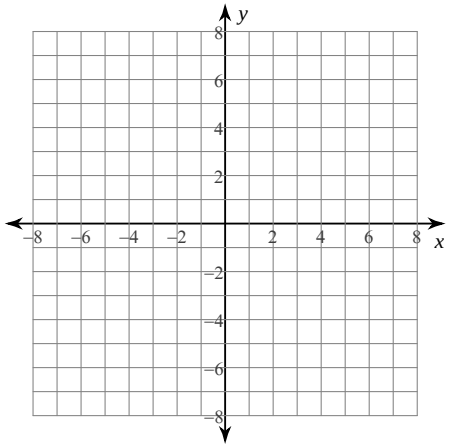
970) $y = x^2 + 8x + 19$



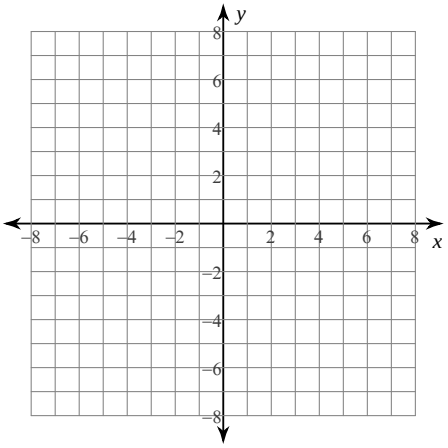
971) $y = -x^2 + 6x - 5$



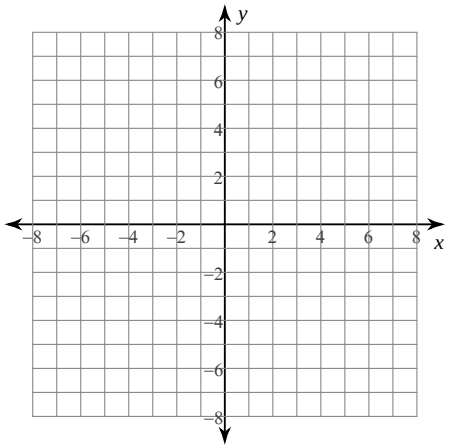
972) $y = x^2 + 4x + 3$



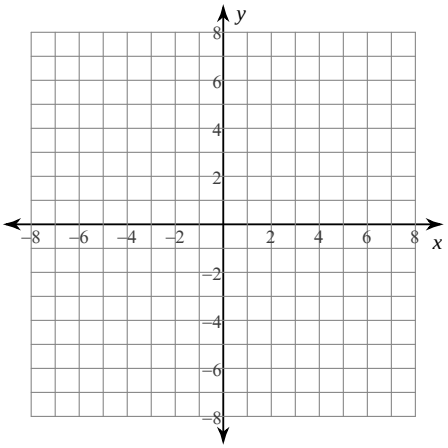
973) $y = x^2 + 12x + 34$



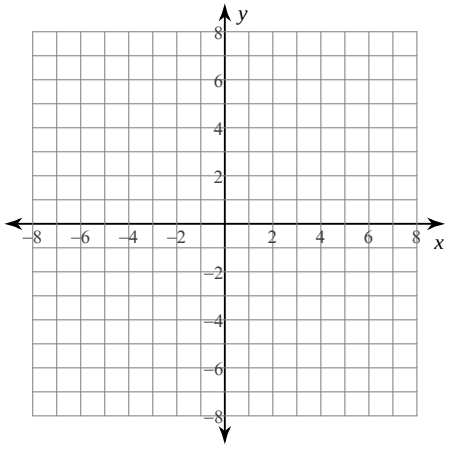
974) $y = -x^2 - 8x - 16$



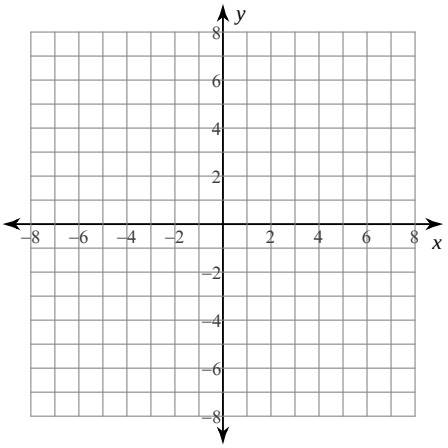
975) $y = x^2 + 6x + 6$



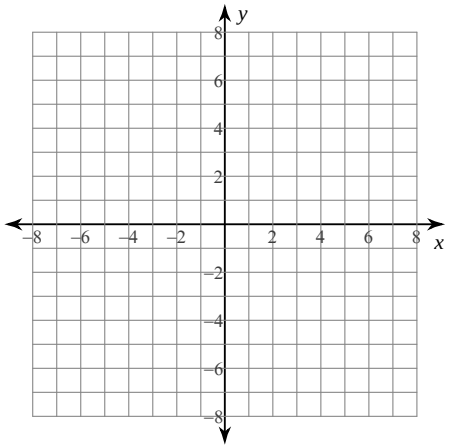
976) $y = -\frac{1}{4}x^2 + 3x - 9$



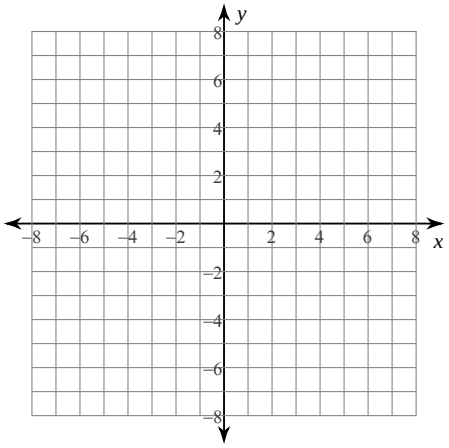
977) $y = -x^2 - 10x - 25$



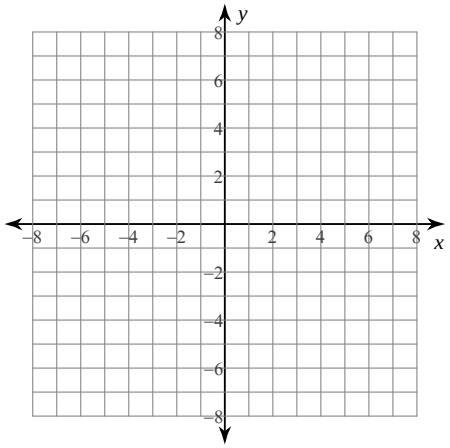
978) $y = -\frac{1}{2}x^2 + x - \frac{5}{2}$



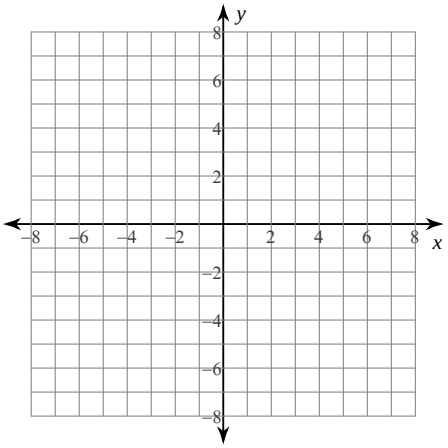
979) $y = -x^2 - 1$



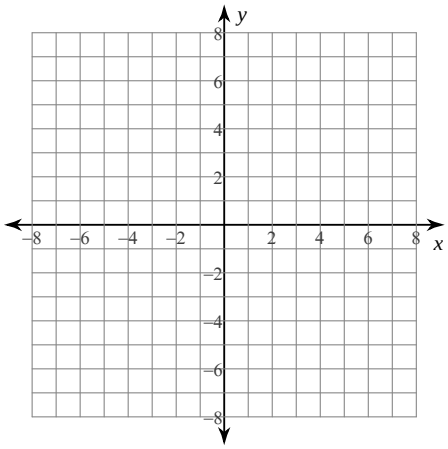
980) $y = -x^2 + 10x - 21$



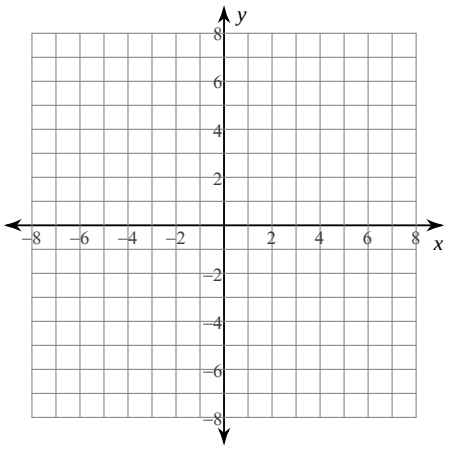
981) $y = 3x^2 + 12x + 6$



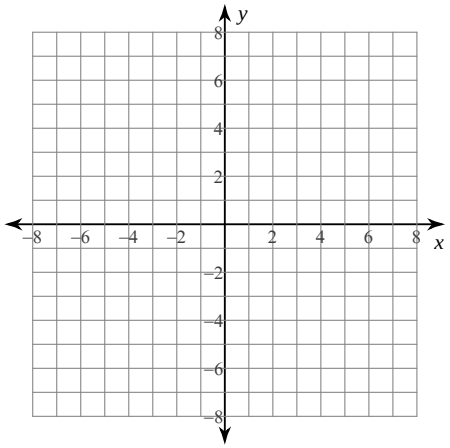
982) $y = 2x^2 - 2$



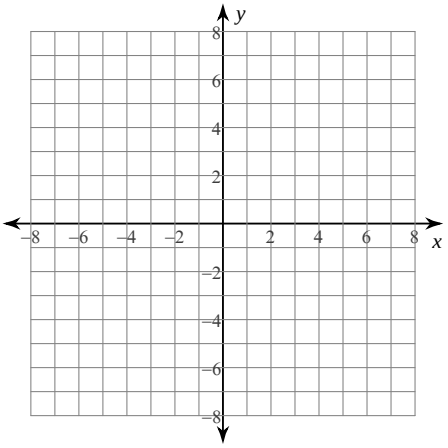
983) $y = -\frac{1}{3}x^2 - 3$



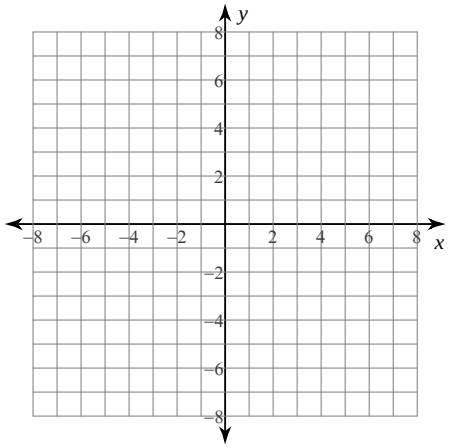
984) $y = -\frac{1}{3}x^2 - \frac{4}{3}x - \frac{10}{3}$



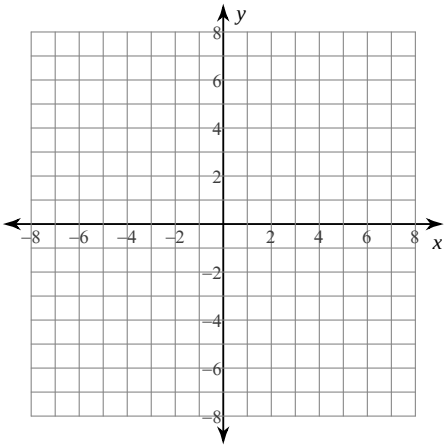
985) $y = -x^2 + 2x + 2$



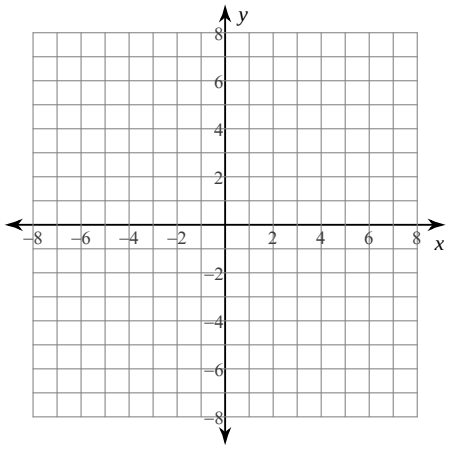
986) $y = 2x^2 - 4x - 2$



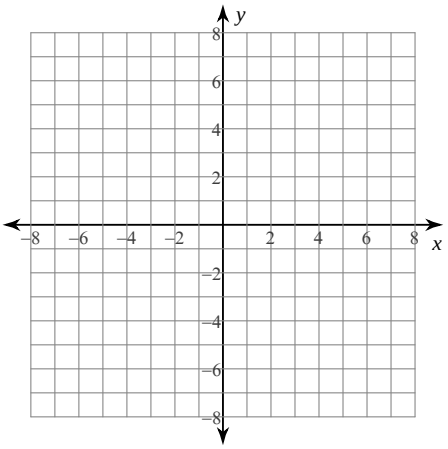
987) $y = 2x^2 + 24x + 69$



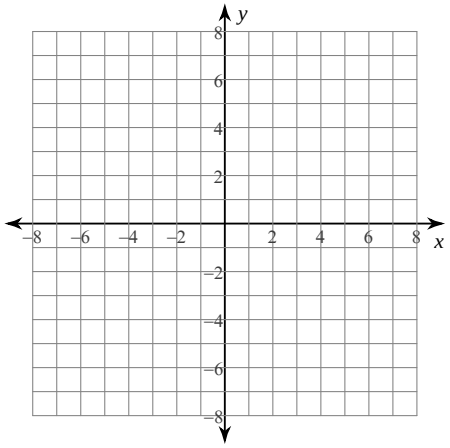
988) $y = x^2 - 8x + 17$



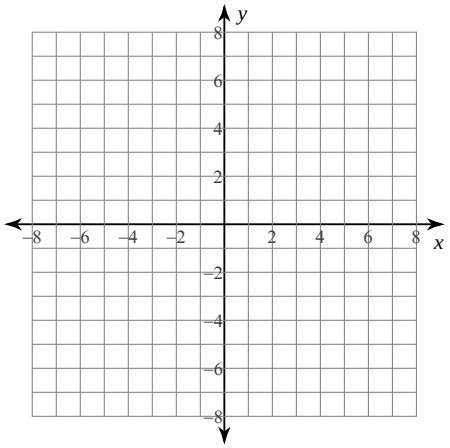
989) $y = -x^2 + 8x - 15$



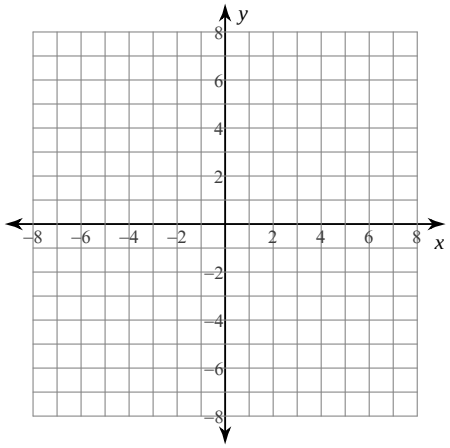
990) $y = -x^2 + 8x - 19$



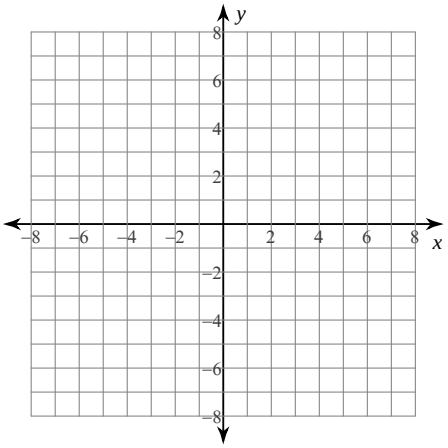
991) $y = \frac{1}{4}x^2 - 4$



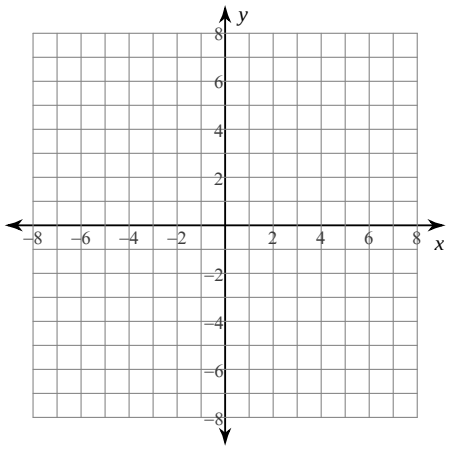
992) $y = x^2 - 4x - 2$



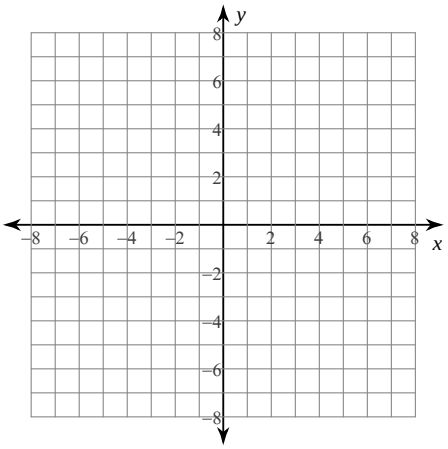
993) $y = 2x^2 - 8x + 4$



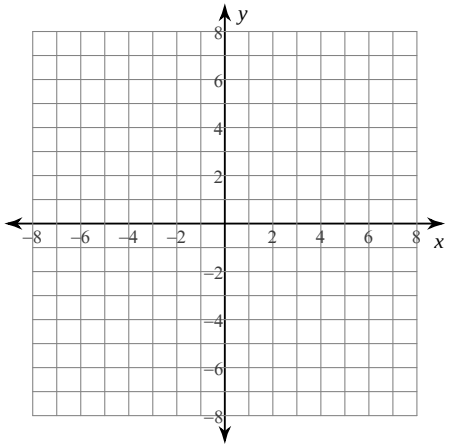
994) $y = \frac{2}{3}x^2 + 4x + 10$



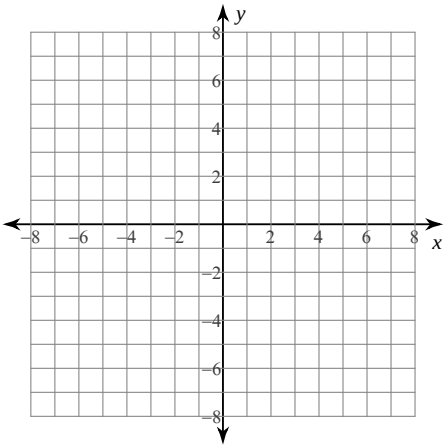
995) $y = x^2 - 8x + 18$



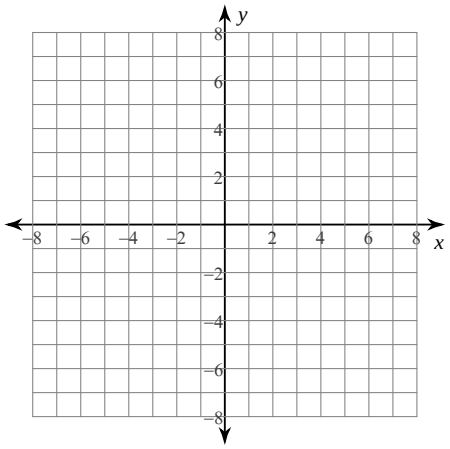
996) $y = -x^2 - 8x - 16$



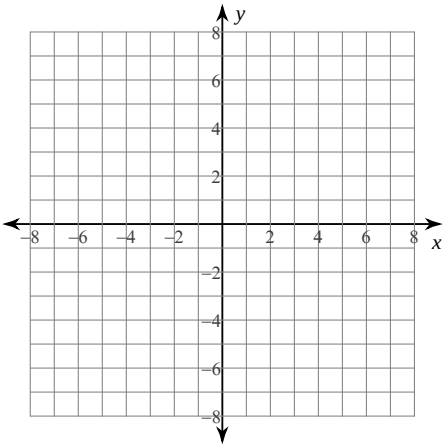
997) $y = -\frac{1}{3}x^2 - \frac{2}{3}x - \frac{10}{3}$



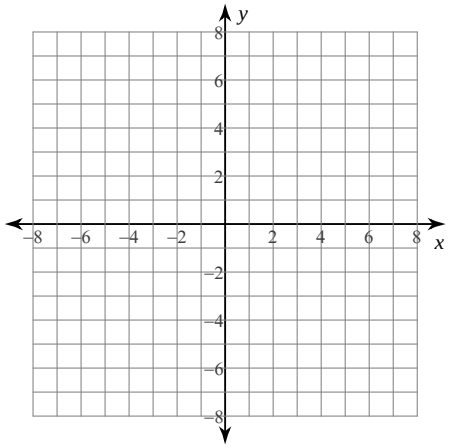
998) $y = -\frac{1}{4}x^2 - x - 7$



999) $y = x^2 + 1$



1000) $y = \frac{1}{4}x^2 + 2x - 2$



Use the information provided to write the vertex form equation of each parabola.

1001) Vertex: $(6, -5)$, Focus: $\left(6, -\frac{19}{4}\right)$

1002) Vertex: $(-4, -9)$, Focus: $\left(-4, -\frac{73}{8}\right)$

1003) Vertex: $(6, -6)$, Focus: $\left(6, -\frac{73}{12}\right)$

1004) Vertex: $(3, -3)$, Focus: $\left(3, -\frac{13}{4}\right)$

1005) Vertex: $(-2, -4)$, Focus: $\left(-2, -\frac{177}{44}\right)$

1006) Vertex: $(-3, -3)$, Focus: $\left(-3, -\frac{83}{28}\right)$

1007) Vertex: $(-10, 6)$, Focus: $\left(-10, \frac{11}{2}\right)$

1008) Vertex: $(0, 0)$, Focus: $\left(0, \frac{1}{8}\right)$

1009) Vertex: $(-10, -4)$, Focus: $\left(-10, -\frac{17}{4}\right)$

1010) Vertex: $(-1, -3)$, Focus: $\left(-1, -\frac{15}{4}\right)$

1011) Vertex: $(8, -2)$, Focus: $\left(8, -\frac{9}{4}\right)$

1012) Vertex: $(-2, 2)$, Focus: $\left(-2, \frac{23}{12}\right)$

1013) Vertex: $(-8, -4)$, Focus: $\left(-8, -\frac{321}{80}\right)$

1014) Vertex: $(5, -9)$, Focus: $\left(5, -\frac{287}{32}\right)$

1015) Vertex: $(5, 1)$, Focus: $\left(5, \frac{9}{8}\right)$

1016) Vertex: $(-5, 4)$, Focus: $\left(-5, \frac{17}{4}\right)$

1017) Vertex: $(2, 3)$, Focus: $\left(2, \frac{35}{12}\right)$

1018) Vertex: $(-8, 7)$, Focus: $\left(-8, \frac{55}{8}\right)$

1019) Vertex: $(2, -10)$, Focus: $\left(2, -\frac{39}{4}\right)$

1020) Vertex: $(8, -9)$, Focus: $(8, -10)$

Solve each system of equations.

1021) $x^2 - y^2 + 8x - 14y - 49 = 0$
$3x^2 + y^2 - 8x + 14y + 49 = 0$

1022) $x^2 - y^2 - 12y - 101 = 0$
$7x^2 - y^2 - 33x - 12y - 41 = 0$

1023) $2x^2 + 24x + 3y + 61 = 0$
$2x^2 - 3y^2 + 24x + 21y + 31 = 0$

1024) $x^2 + y^2 - 7x - 14y + 50 = 0$
$y^2 - 10x - 14y + 36 = 0$

1025) $2x^2 - y^2 + 2x - 2y - 24 = 0$
$4x^2 - y^2 + 18x - 2y + 8 = 0$

1026) $17y^2 - 4x + 34y - 23 = 0$
$x^2 + 17y^2 - x + 34y - 93 = 0$

1027) $x^2 + y^2 + 2x + 17y + 17 = 0$
$x^2 + 4y^2 + 2x + 32y + 29 = 0$

1028) $x^2 + 2y^2 - 12x - 11y + 32 = 0$
$x^2 + 5y^2 - 12x - 38y + 92 = 0$

1029) $4x^2 + 4y^2 + 7x + 8y - 98 = 0$
$19x^2 + 4y^2 + 127x + 8y + 82 = 0$

1030) $11y^2 + 15x + 66y - 32 = 0$
$x^2 + 11y^2 + 10x + 66y - 56 = 0$

1031) $13x^2 - 26x - 49y - 134 = 0$
$-13x^2 + 8y^2 + 26x - 7y - 106 = 0$

1032) $2x^2 - y^2 - 12x + 4y - 3 = 0$
$3x^2 + y^2 - 18x - 4y + 3 = 0$

1033) $2x^2 - y^2 - 18x + 16y - 80 = 0$
$7x^2 + y^2 - 63x - 16y - 10 = 0$

1034) $x^2 + 2y^2 + 16x + 4y - 6 = 0$
$-x^2 + 3y^2 - 16x - 54y + 131 = 0$

1035) $2x^2 + y^2 + 22x + 8y + 11 = 0$
$13x^2 - y^2 + 143x - 8y + 139 = 0$

1036) $x^2 + y^2 - 16x - 12y + 91 = 0$
$-x^2 + y^2 + 16x - 12y - 37 = 0$

1037) $x^2 + y^2 - 4x - 12y - 9 = 0$
$x^2 + 25y^2 - 4x + 36y + 15 = 0$

1038) $-x^2 + y^2 - 2x - 8y - 20 = 0$
$-9x^2 + y^2 - 34x - 8y - 52 = 0$

1039) $-x^2 + y^2 + 4x + 8y + 4 = 0$
$x^2 - y^2 + 10x - 8y - 46 = 0$

1040) $7x^2 + 7y^2 + 28x + 79y + 100 = 0$
$-7x^2 + 2y^2 - 28x + 2y - 28 = 0$

1041) $x^2 + y^2 + 2x + 6y - 70 = 0$
$x^2 + y^2 - 11x + 6y + 21 = 0$

1042) $y^2 + x + 3y - 31 = 0$
$4y^2 + x + 12y - 115 = 0$

1043) $-3x^2 + 6y^2 - 36x - 4y - 140 = 0$
$3x^2 + 14y^2 + 36x - 36y - 20 = 0$

1044) $11y^2 + 49x - 66y + 1 = 0$
$10x^2 + 11y^2 + 119x - 66y - 179 = 0$

1045) $-5x^2 + 5y^2 + 60x - 26y - 175 = 0$
$-5x^2 + 14y^2 + 60x - 71y - 175 = 0$

1046) $3x^2 + 24x - 11y - 60 = 0$
$3x^2 - 21y^2 + 24x - 74y - 60 = 0$

1047) $2x^2 - 2y^2 + 11x + 28y - 96 = 0$
$6x^2 - 2y^2 + 35x + 28y - 96 = 0$

1048) $x^2 + 2y^2 + 6y - 56 = 0$
$x^2 + 22y - 88 = 0$

1049) $x^2 + y^2 + 8x - 14y - 104 = 0$
$x^2 + y^2 + 9x - 14y - 113 = 0$

1050) $x^2 - 6x + y - 39 = 0$
$x^2 + 18x + y + 57 = 0$

Factor each. One root has been given.

1051) $x^4 + 8x^3 + 2x^2 - 52x + 16 = 0;\ -3 + \sqrt{11}$

1052) $x^4 + 7x^3 - 5x^2 - 55x + 52 = 0;\ -2 + \sqrt{17}$

1053) $x^4 - 2x^3 - 11x^2 - 18x - 10 = 0;\ -1 + i$

1054) $x^4 - 2x^2 - 64x - 255 = 0;\ -1 + 4i$

1055) $x^4 - 2x^3 - 6x^2 + 32x - 160 = 0;\ 1 + 3i$

1056) $x^4 - 10x^3 + 42x^2 - 112x + 160 = 0;\ 1 + 3i$

1057) $x^4 - 10x^3 + 31x^2 - 36x + 12 = 0;\ 3 + \sqrt{6}$

1058) $x^4 - 10x^3 + 35x^2 - 48x + 18 = 0;\ 2 + \sqrt{2}$

1059) $x^4 - 8x^3 + 8x - 1 = 0;\ 4 + \sqrt{15}$

1060) $x^4 - 3x^3 - 46x^2 - 102x - 60 = 0;\ 3 + \sqrt{39}$

1061) $x^4 - 13x^2 - 20x - 4 = 0;\ 2 + \sqrt{5}$

1062) $x^4 - 32x^2 - 72x - 32 = 0;\ 3 + \sqrt{13}$

1063) $x^4 - 9x^3 - 15x^2 + 163x + 60 = 0;\ 4 + \sqrt{19}$

1064) $x^4 - 8x^3 - 3x^2 + 128x - 208 = 0;\ 4 + \sqrt{3}$

1065) $x^4 + 9x^3 + 18x^2 - 30x - 100 = 0;\ -3 + i$

1066) $x^4 - 4x^3 - 17x^2 + 120x - 100 = 0;\ 4 + 2i$

1067) $x^5 - 8x^4 + 7x^3 + 30x^2 + 50x = 0;\ -1 + i$

1068) $x^5 - 5x^4 - 22x^3 + 74x^2 + 180x = 0;\ 1 + \sqrt{19}$

1069) $x^5 + 7x^4 + 15x^3 - x^2 - 130x = 0;\ -2 + 3i$

1070) $x^5 - 13x^4 + 78x^3 - 208x^2 + 192x = 0;\ 4 + 4i$

Use Cramer's Rule to solve each system.

1071) $2x + 5y = 5$
$-6x - y = 27$

1072) $-4x - 6y = -8$
$4x + 3y = 7$

1073) $6y = -30$
$-x - 4y = 20$

1074) $-2x - 5y = 6$
$2x + 2y = -5$

1075) $-4x - 4y = -12$
$-6x + y = 10$

1076) $-2x + y = 10$
$-3x - 3y = 15$

1077) $-5x + 2y = -6$
$2x + 2y = 2$

1078) $-4x + 6y = -20$
$-2x - 2y = 20$

1079) $-6x - 6y = -6$
$3x - 5y = 3$

1080) $5x - 5y = -20$
$-5x - 3y = -20$

1081) $x - 3y = 5$
$-4x - 6y = -2$

1082) $-2x + y = 6$
$5x - y = -4$

1083) $5x - y = -15$
$2x - 6y = 22$

1084) $-3x + 4y = -2$
$6x - 5y = 16$

1085) $3x - 6y = -15$
$-2x - 4y = 2$

1086) $-3x + 6y = -18$
$x - 4y = -11$

1087) $x - 4y = 9$
$2x + 3y = -8$

1088) $2y = 2$
$-3x - 5y = 4$

1089) $4x + 2y = 20$
$-3x + y = -15$

1090) $-2x - 2y = -1$
$-4x + 4y = 10$

Convert each degree measure into radians and each radian measure into degrees.

1091) $-\frac{5\pi}{4}$

1092) -120°

1093) $\frac{4\pi}{3}$

1094) $-\frac{35\pi}{18}$

1095) $-\frac{7\pi}{2}$

1096) $-\frac{9\pi}{2}$

1097) $\frac{7\pi}{36}$

1098) -110°

1099) $-\frac{11\pi}{6}$

1100) 1025°

1101) $\frac{11\pi}{6}$

1102) $\frac{35\pi}{9}$

1103) $-\frac{53\pi}{36}$

1104) $\frac{17\pi}{18}$

1105) $-\frac{13\pi}{36}$

1106) 405°

1107) -1030°

1108) -225°

1109) -765°

1110) $\frac{\pi}{3}$

1111) 150°

1112) -150°

1113) $\frac{2\pi}{3}$

1114) 120°

1115) 240°

1116) $\frac{5\pi}{6}$

1117) $-\frac{7\pi}{9}$

1118) 590°

1119) $\frac{2\pi}{9}$

1120) -690°

1121) $\frac{23\pi}{12}$

1122) $210°$

1123) $\frac{13\pi}{6}$

1124) $\frac{\pi}{2}$

1125) $450°$

1126) $-\frac{11\pi}{6}$

1127) $-\frac{\pi}{4}$

1128) $\frac{\pi}{4}$

1129) $45°$

1130) $30°$

State the possible number of positive and negative zeros for each function.

1131) $f(x) = 15x^5 + 6x^4 - 40x^3 - 16x^2 - 15x - 6$

1132) $f(x) = 5x^5 + 10x^4 + 52x^3 + 104x^2 + 63x + 126$

1133) $f(x) = 2x^6 + 3x^4 - 2x^2 - 3$

1134) $f(x) = 2x^6 - x^4 - 50x^2 + 25$

1135) $f(x) = 9x^6 + 45x^4 - 25x^2 - 125$

1136) $f(x) = 2x^5 - 10x^4 + 11x^3 - 55x^2 + 14x - 70$

1137) $f(x) = 5x^5 - 10x^4 + 18x^3 - 36x^2 - 35x + 70$

1138) $f(x) = 64x^6 - 1$

1139) $f(x) = 27x^6 + 217x^3 + 8$

1140) $f(x) = x^6 - 64$

1141) $f(x) = 4x^6 + 8x^4 - 25x^2 - 50$

1142) $f(x) = 6x^5 - 9x^4 + 40x^3 - 60x^2 - 126x + 189$

1143) $f(x) = 25x^6 - 100x^4 - 16x^2 + 64$

1144) $f(x) = 27x^6 + 215x^3 - 8$

1145) $f(x) = 10x^5 + 5x^4 - 38x^3 - 19x^2 - 60x - 30$

1146) $f(x) = 3x^5 - 6x^4 - 20x^3 + 40x^2 - 32x + 64$

1147) $f(x) = 64x^6 - 1$

1148) $f(x) = x^6 - 64$

1149) $f(x) = 10x^5 + 5x^4 + 26x^3 + 13x^2 - 56x - 28$

1150) $f(x) = 6x^5 + 2x^4 + 45x^3 + 15x^2 + 54x + 18$

Evaluate each determinant.

1151) $\begin{vmatrix} -1 & -2 \\ -3 & -1 \end{vmatrix}$

1152) $\begin{vmatrix} -4 & -4 \\ -4 & 4 \end{vmatrix}$

1153) $\begin{vmatrix} -5 & 1 \\ -2 & 3 \end{vmatrix}$

1154) $\begin{vmatrix} -2 & 4 \\ -1 & -1 \end{vmatrix}$

1155) $\begin{vmatrix} 3 & 0 \\ -3 & -4 \end{vmatrix}$

1156) $\begin{vmatrix} 2 & 5 \\ 0 & -5 \end{vmatrix}$

1157) $\begin{vmatrix} 5 & -5 \\ 0 & 2 \end{vmatrix}$

1158) $\begin{vmatrix} -3 & -2 \\ 1 & -2 \end{vmatrix}$

1159) $\begin{vmatrix} 4 & 1 \\ 2 & 1 \end{vmatrix}$

1160) $\begin{vmatrix} 0 & -1 \\ 1 & -5 \end{vmatrix}$

1161) $\begin{vmatrix} -2 & -5 \\ -2 & -3 \end{vmatrix}$

1162) $\begin{vmatrix} 1 & -4 \\ -1 & 4 \end{vmatrix}$

1163) $\begin{vmatrix} 5 & -2 \\ 0 & 0 \end{vmatrix}$

1164) $\begin{vmatrix} -3 & 0 \\ 0 & -4 \end{vmatrix}$

1165) $\begin{vmatrix} 3 & 3 \\ 1 & 0 \end{vmatrix}$

1166) $\begin{vmatrix} -4 & 5 \\ 3 & -5 \end{vmatrix}$

1167) $\begin{vmatrix} 0 & 1 \\ 1 & 3 \end{vmatrix}$

1168) $\begin{vmatrix} -1 & -4 \\ 4 & 2 \end{vmatrix}$

1169) $\begin{vmatrix} 2 & -3 \\ 4 & -1 \end{vmatrix}$

1170) $\begin{vmatrix} 5 & -1 \\ 5 & 5 \end{vmatrix}$

Find the discriminant of each quadratic equation then state the number and type of solutions.

1171) $-6v^2 - 8v + 7 = 10$

1172) $-2b^2 - 4b + 7 = 9$

1173) $2x^2 - 8x + 20 = 10$

1174) $-7n^2 - n + 6 = 10$

1175) $5a^2 + 4a - 5 = -10$

1176) $-2k^2 - 8k - 2 = 4$

1177) $9p^2 - p - 17 = -7$

1178) $-8x^2 + 6x + 5 = 3$

1179) $2p^2 - 4p - 7 = -9$

1180) $-9m^2 - m + 2 = -6$

1181) $10r^2 - r + 5 = 7$

1182) $3x^2 - x + 8 = 8$

1183) $2n^2 + 4n - 6 = -8$

1184) $-4a^2 - 4a + 7 = 8$

1185) $8v^2 + 8v + 9 = 7$

1186) $x^2 - 6x + 12 = 3$

1187) $-x^2 - 5x - 17 = -10$

1188) $-4n^2 + 4n + 8 = 9$

1189) $9k^2 + 7k + 1 = -9$

1190) $2p^2 + 3p + 1 = 3$

Divide.

1191) $(10v^3 - 20v^2 - 37v + 27) \div (v - 3)$

1192) $(x^3 - 4x^2 - 16x + 6) \div (x + 3)$

1193) $(n^3 - 6n^2 + 5n + 22) \div (n - 4)$

1194) $(4a^3 + 18a^2 - 40a - 34) \div (a + 6)$

1195) $(k^3 + 4k^2 - 68k + 56) \div (k - 6)$

1196) $(p^3 + 5p^2 + p - 12) \div (p + 4)$

1197) $(7x^3 + 7x^2 - 19x - 5) \div (x + 2)$

1198) $(n^3 - 3n^2 - 53n + 1) \div (n - 9)$

1199) $(p^3 + 9p^2 - 6p - 5) \div (p - 1)$

1200) $(m^3 - 2m^2 - 5m - 8) \div (m + 1)$

1201) $(a^3 - 10a^2 + a + 12) \div (a - 1)$

1202) $(n^3 + 13n^2 + 34n - 42) \div (n + 6)$

1203) $(k^3 - k^2 - 17k + 19) \div (k + 4)$

1204) $(10x^3 - 17x^2 + 2x - 18) \div (x - 2)$

1205) $(x^3 + x^2 - 79x - 65) \div (x + 9)$

1206) $(10n^3 - 72n^2 + 11n + 23) \div (n - 7)$

1207) $(m^3 - 5m^2 - 29m - 12) \div (m + 3)$

1208) $(p^3 - 18p^2 + 88p - 85) \div (p - 10)$

1209) $(3x^3 + 27x^2 - 32x - 28) \div (x + 10)$

1210) $(n^3 - 14n^2 + 45n - 57) \div (n - 10)$

1211) $(n^3 + 7n^2 + n - 38) \div (n + 6)$

1212) $(6x^3 - 15x^2 - 26x - 32) \div (x - 4)$

1213) $(r^3 + 4r^2 + 9r + 16) \div (r + 3)$

1214) $(m^3 - 4m^2 - 29m - 27) \div (m + 3)$

1215) $(x^3 + x^2 - 23x + 7) \div (x - 4)$

1216) $(3n^3 - 9n^2 + 13n - 16) \div (n - 1)$

1217) $(b^3 + b^2 + 2b + 11) \div (b + 2)$

1218) $(6v^3 + 51v^2 - 85v + 55) \div (v + 10)$

1219) $(5x^3 - 29x^2 - 10x + 26) \div (x - 6)$

1220) $(n^3 + 6n^2 - 13n - 50) \div (n + 7)$

Identify the domain and range of each.

1221) $y = \log_5 (3x + 6) - 2$

1222) $y = \log_{\frac{1}{5}} (3x + 2) - 4$

1223) $y = \log_6 (4x - 9) - 5$

1224) $y = \log_4 (2x + 3) + 5$

1225) $y = \log_5 (3x + 16) + 4$

1226) $y = \log_5 (4x + 15) + 2$

1227) $y = \log_4 (3x + 3)$

1228) $y = \log_5 (4x + 10) + 1$

1229) $y = \ln (4x + 8) - 4$

1230) $y = \log_4 (4x + 20) - 4$

1231) $y = -5 + \sqrt{x+4}$

1232) $y = \sqrt{x+4}$

1233) $y = \sqrt{x} - 3$

1234) $y = -5 + \frac{2}{3}\sqrt{x}$

1235) $y = 3\sqrt{x}$

1236) $y = 3\sqrt{x} - 3$

1237) $y = 3\sqrt{x+5} - 5$

1238) $y = 3\sqrt{x} - 2$

1239) $y = \frac{1}{2}\sqrt{x+6}$

1240) $y = \sqrt{x} + 3$

1241) $y = \log_6 (3x + 18) - 3$

1242) $y = \log_6 (4x - 12) - 4$

1243) $y = \log (2x + 12) + 3$

1244) $y = \log (2x - 5) - 1$

1245) $y = \log_{\frac{1}{5}} (4x - 1) - 4$

1246) $y = \log_5 (4x + 7) + 1$

1247) $y = \log_4 (2x + 1)$

1248) $y = \log_4 (3x - 5) - 2$

1249) $y = \log_4 (4x - 7) - 3$

1250) $y = \log_2 (2x + 12) - 5$

1251) $y = \sqrt{x + 5}$

1252) $y = \sqrt{x - 3} - 2$

1253) $y = -1 + \sqrt{x}$

1254) $y = \sqrt{x - 1}$

1255) $y = \sqrt{x}$

1256) $y = \sqrt{x + 4} + 1$

1257) $y = \sqrt{x} + 1$

1258) $y = 3\sqrt{x} - 4$

1259) $y = \frac{1}{2}\sqrt{x + 4} - 1$

1260) $y = 3\sqrt{x - 1}$

Solve each equation. Round your answers to the nearest ten-thousandth.

1261) $2 \cdot 3^{-7n} = 58$

1262) $13^{-10k} - 8.5 = 35.2$

1263) $10^{p + 1.5} + 7 = 80$

1264) $5 \cdot 7^{x - 9} = 30$

1265) $9 \cdot 5^{5n} = 43$

1266) $-7 \cdot 14^{m + 10} = -13$

1267) $3 \cdot 10^{3r} = 40$

1268) $2 \cdot e^{x-1} = 54$

1269) $6 \cdot 6^{n-9} = 17$

1270) $-10 \cdot 15^{b-4} = -39$

1271) $6 \cdot 2^{m+9.2} = 86$

1272) $1.3 \cdot 10^{-9p} = 86$

1273) $-6 \cdot 8^{-2x} = -59$

1274) $-2 \cdot 6^{n+4.8} = -15$

1275) $-2.1 \cdot 15^{b-7} = -72$

1276) $12^{7r} + 7 = 61$

1277) $10^{5x} - 10 = 19.6$

1278) $-5 \cdot 7^{n-1.7} = -41$

1279) $16^{b-6} - 9 = 29.4$

1280) $14^{-2v} - 4 = 42$

Solve each equation or state if there is no unique solution.

1281) $\begin{bmatrix} 13 \\ -20 \\ 12 \end{bmatrix} = Y + \begin{bmatrix} 2 \\ -9 \\ 1 \end{bmatrix}$

1282) $\begin{bmatrix} -6 & 15 \\ 10 & -8 \end{bmatrix} = \begin{bmatrix} -3 & 0 \\ 6 & -2 \end{bmatrix} C$

1283) $\begin{bmatrix} 11 \\ -13 \end{bmatrix} = \begin{bmatrix} 4 & 7 \\ -5 & -9 \end{bmatrix} Z$

1284) $-3B = \begin{bmatrix} -24 & -21 & 0 & 3 \end{bmatrix}$

1285) $\begin{bmatrix} -35 & -15 & -25 \end{bmatrix} = 5Y$

1286) $\begin{bmatrix} 9 & -1 \\ -4 & 15 \end{bmatrix} = X + \begin{bmatrix} -2 & 1 \\ 1 & 10 \end{bmatrix}$

1287) $-2C = \begin{bmatrix} -22 \\ 2 \\ 18 \\ 8 \end{bmatrix}$

1288) $\begin{bmatrix} 19 \\ 19 \end{bmatrix} = \begin{bmatrix} 2 & 1 \\ 2 & 1 \end{bmatrix} X$

1289) $B - \begin{bmatrix} -9 & -5 \\ 8 & -1 \end{bmatrix} = \begin{bmatrix} 20 & 0 \\ -13 & 1 \end{bmatrix}$

1290) $\begin{bmatrix} -2 & -5 \\ 2 & 3 \end{bmatrix} X = \begin{bmatrix} -2 & 0 \\ -2 & 4 \end{bmatrix}$

1291) $\begin{bmatrix} -40 & -30 \\ -35 & -34 \end{bmatrix} = \begin{bmatrix} 0 & 10 \\ 1 & 10 \end{bmatrix} X$

1292) $\begin{bmatrix} -6 & 4 \\ 5 & -4 \end{bmatrix} C = \begin{bmatrix} 16 & 24 \\ -16 & -14 \end{bmatrix}$

1293) $\begin{bmatrix} 8 & 6 \\ 10 & -10 \end{bmatrix} - Z = \begin{bmatrix} -3 & -1 \\ 11 & 1 \end{bmatrix}$

1294) $\begin{bmatrix} -9 & 15 \\ -6 & 12 \end{bmatrix} = 3B$

1295) $\begin{bmatrix} -9 & -24 \\ 33 & 24 \end{bmatrix} = 3Y$

1296) $-4C = \begin{bmatrix} -8 \\ -20 \\ -16 \\ 0 \end{bmatrix}$

1297) $\begin{bmatrix} -12 & -4 \\ 6 & 2 \end{bmatrix} = \begin{bmatrix} 0 & -2 \\ 0 & 1 \end{bmatrix} X$

1298) $\begin{bmatrix} 8 & 4 \\ -8 & -4 \end{bmatrix} X = \begin{bmatrix} 28 \\ -28 \end{bmatrix}$

1299) $B + \begin{bmatrix} -3 \\ -9 \\ 5 \\ 2 \end{bmatrix} = \begin{bmatrix} -8 \\ -15 \\ 5 \\ 0 \end{bmatrix}$

1300) $-4Y = \begin{bmatrix} -12 & -4 & -32 \end{bmatrix}$

Find all roots.

1301) $x^3 - 2x^2 + x - 2 = 0$

1302) $x^6 + 2x^4 - 4x^2 - 8 = 0$

1303) $x^6 - 124x^3 - 125 = 0$

1304) $x^6 + x^4 - 4x^2 - 4 = 0$

1305) $x^4 + 10x^2 + 21 = 0$

1306) $x^4 - 14x^2 + 49 = 0$

1307) $x^4 - 81 = 0$

1308) $x^6 - 28x^3 + 27 = 0$

1309) $x^4 + 8x^2 + 16 = 0$

1310) $x^3 - 125 = 0$

1311) $(x^2 + 5)(x^2 - 5)(2x^2 + 3)(2x^2 - 3) = 0$

1312) $(2x + 1)(4x^2 - 2x + 1)(2x - 1)(4x^2 + 2x + 1) = 0$

1313) $(2x^2 + 3)(2x^2 - 3)(x^2 + 1)(x + 1)(x - 1) = 0$

1314) $(5x^2+1)(x^2+1)=0$

1315) $(x^2-5)(5x^2-4)=0$

1316) $(3x^2+1)(3x^2-1)(x^2+2)(x^2-2)=0$

1317) $(2x+1)(3x^2+8)(x^2-7)=0$

1318) $(x-5)(x^2+2)(3x^2-4)=0$

1319) $(2x+3)(x^2+2)(5x^2-7)=0$

1320) $(x^2+2)(3x^2+4)(3x^2-4)=0$

1321) $x^4+3x^2-18=0$

1322) $x^3+125=0$

1323) $x^3-64=0$

1324) $x^3+4x^2+5x+20=0$

1325) $x^6-2x^4-x^2+2=0$

1326) $x^6-1=0$

1327) $x^6+5x^4-9x^2-45=0$

1328) $x^4+8x^2-9=0$

1329) $x^4-5x^2+4=0$

1330) $x^4-3x^2-4=0$

1331) $(x-3)(x^2+4)(3x^2+1)=0$

1332) $(x^2+1)(4x^2+1)(2x+1)(2x-1)=0$

1333) $(x^2+2)(x^2-2)(3x^2+2)(3x^2-2)=0$

1334) $(x-1)(x^2+x+1)(3x-2)(9x^2+6x+4)=0$

1335) $(x^2+2)(x^2-2)(3x^2+4)(3x^2-4)=0$

1336) $(3x^2+4)(3x^2-4)(x^2+1)(x+1)(x-1)=0$

1337) $(x+2)(x-2)(2x^2-1)=0$

1338) $(x^2-3)(3x^2-5)=0$

1339) $(5x+3)(5x^2-9)(x^2+1)=0$

1340) $(3x-2)(x^2+4)(2x^2-5)=0$

Solve each equation by factoring.

1341) $x^2=4$

1342) $x^2-4=-3x$

1343) $a^2=-24-10a$

1344) $k^2+48=-14k$

1345) $p^2=-20-9p$

1346) $x^2+4x=32$

1347) $n^2=4n$

1348) $m^2+8m=0$

1349) $r^2-11r=-30$

1350) $x^2=-56-15x$

1351) $a^2=6a+16$

1352) $k^2=8+2k$

1353) $p^2+1=-2p$

1354) $x^2-4x=0$

1355) $n^2 = 6n - 5$

1356) $m^2 + 40 = -13m$

1357) $r^2 = -5r + 14$

1358) $x^2 + 3x = 10$

1359) $n^2 - 10n = -16$

1360) $b^2 - 12 = -b$

Solve each equation by taking square roots.

1361) $4n^2 - 4 = 8$

1362) $2b^2 - 1 = 137$

1363) $-2 - 5x^2 = -82$

1364) $9v^2 - 5 = 31$

1365) $5n^2 + 2 = 247$

1366) $2k^2 + 1 = 33$

1367) $3a^2 - 3 = -5$

1368) $8x^2 + 5 = -61$

1369) $6x^2 + 5 = 545$

1370) $5n^2 + 4 = -50$

1371) $5x^2 - 6 = 199$

1372) $6r^2 - 9 = -95$

1373) $10a^2 - 7 = 733$

1374) $3n^2 - 2 = -5$

1375) $1 - 6x^2 = -41$

1376) $4x^2 + 4 = 148$

1377) $8v^2 - 3 = 5$

1378) $4n^2 - 7 = 74$

1379) $9k^2 + 3 = 84$

1380) $7p^2 + 7 = 182$

Solve each equation with the quadratic formula.

1381) $2m^2 = 7m + 7$

1382) $4p^2 - 15 = 0$

1383) $8x^2 = 22$

1384) $6m^2 + 7m = 98$

1385) $2n^2 = 90 + 8n$

1386) $4r^2 = 5r - 8$

1387) $5x^2 = 78 + 11x$

1388) $10n^2 - 3n = -3$

1389) $5b^2 - 2b = -12$

1390) $10v^2 + 9 = 12v$

1391) $7x^2 - x = -1$

1392) $5n^2 + 3 = 0$

1393) $7m^2 = -6$

1394) $5r^2 = 9$

1395) $n^2 - 11n = 16$

1396) $5x^2 + x = -7$

1397) $6b^2 - b = 26$

1398) $2x^2 + 6x = 36$

1399) $8v^2 - 17 = -2v$

1400) $2n^2 - 45 = -n$

Solve each equation. Remember to check for extraneous solutions.

1401) $\sqrt{3k + 15} = \sqrt{k + 7}$

1402) $\sqrt{22 - 2a} = \sqrt{13 - a}$

1403) $\sqrt{8 - n} = \sqrt{2n - 10}$

1404) $\sqrt{11 - 2x} = \sqrt{8x + 1}$

1405) $\sqrt{2x + 24} = \sqrt{3x + 32}$

1406) $25 = 5\sqrt{10p + 25}$

1407) $\sqrt{2x - 9} = \sqrt{3x - 14}$

1408) $\sqrt{3a} = \sqrt{15 - 2a}$

1409) $\sqrt{k + 2} = \sqrt{10 - k}$

1410) $\sqrt{2p - 30} = \sqrt{\frac{p}{8}}$

1411) $\frac{1}{p} = \frac{1}{6p} + \frac{1}{p^2}$

1412) $\frac{1}{m^2} = \frac{2}{3m^2} - \frac{1}{3m}$

1413) $\frac{1}{n} + \frac{2}{3n^2} = \frac{1}{3n}$

1414) $\frac{6}{x} = \frac{x - 5}{2x^2} - \frac{3}{x^2}$

1415) $\frac{5}{m} + 1 = \frac{4}{5m}$

1416) $\frac{2}{r} + 1 = \frac{1}{r}$

1417) $\frac{1}{x} = \frac{1}{2x} + \frac{x-4}{x}$

1418) $\frac{2}{b^2} = \frac{1}{b} + \frac{1}{b^2}$

1419) $\frac{4}{n^2} - \frac{n+2}{n^2} = \frac{1}{2n}$

1420) $1 + \frac{1}{v} = \frac{3}{v}$

1421) $\sqrt{9-b} = 2$

1422) $\sqrt{-3-b} = \sqrt{b+5}$

1423) $-16 = -8\sqrt{x-3}$

1424) $8 = \sqrt{16v}$

1425) $\sqrt{-2-4x} = \sqrt{4-2x}$

1426) $14 = \sqrt{x+4} + 7$

1427) $\sqrt{9-x} = \sqrt{17-2x}$

1428) $\sqrt{\frac{n}{4}} = 2$

1429) $-10 = -10 + \sqrt{20-2r}$

1430) $16 = \sqrt{2n} + 8$

1431) $\frac{x-5}{2x^2} + \frac{1}{2x^2} = \frac{1}{x}$

1432) $\frac{2p-6}{p} = 1 + \frac{6}{p}$

1433) $\frac{5}{4n^2} = \frac{1}{n^2} + \frac{1}{4n}$

1434) $\frac{5}{6m^2} = \frac{1}{m^2} + \frac{m+1}{6m^2}$

1435) $\frac{1}{r^2} - \frac{5}{r} = \frac{6}{r^2}$

1436) $\frac{1}{6} + \frac{1}{6n} = \frac{1}{3n}$

1437) $\frac{x-6}{x} = \frac{1}{3} + \frac{1}{3x}$

1438) $\frac{1}{v^2} = \frac{3}{v^2} + \frac{v-3}{v^2}$

1439) $\frac{2}{3b} = \frac{b+1}{6b^2} + \frac{1}{2b^2}$

1440) $\frac{6}{5} = \frac{x+6}{x} + \frac{x+1}{x}$

Solve each equation for $0 \le \theta < 360$.

1441) $-3 + \cos\theta = \dfrac{-6+\sqrt{2}}{2}$

1442) $-8\sin\theta = 4\sqrt{3}$

1443) $4 + \tan\theta = 3$

1444) $-\dfrac{\sqrt{2}}{2} = -\cos\theta$

1445) $-5 + \sin\theta = -6$

1446) $-2\cos\theta = -\sqrt{2}$

1447) $6\sin\theta = 3$

1448) $-\tan\theta = \dfrac{\sqrt{3}}{3}$

1449) $-\dfrac{7}{2} = -4 + \sin\theta$

1450) $2 + \tan\theta = 1$

1451) $1 = \tan\theta$

1452) $-4 = 4\sin\theta$

1453) $\dfrac{-4-\sqrt{3}}{2} = -2 + \cos\theta$

1454) $-3 + \sin\theta = \dfrac{-6+\sqrt{3}}{2}$

1455) $-1 = -2\sin\theta$

1456) $-2 + \sin\theta = -\dfrac{3}{2}$

1457) $-4 = -8\cos\theta$

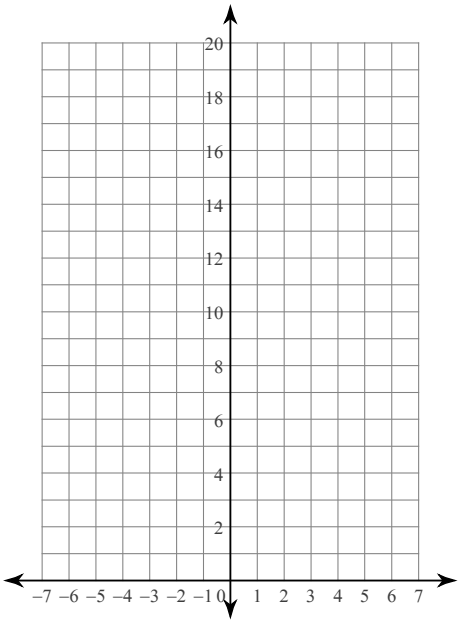
1458) $-2 + \cos\theta = \dfrac{-6 + 2\sqrt{3}}{3}$

1459) $-3 + \tan\theta = -2$

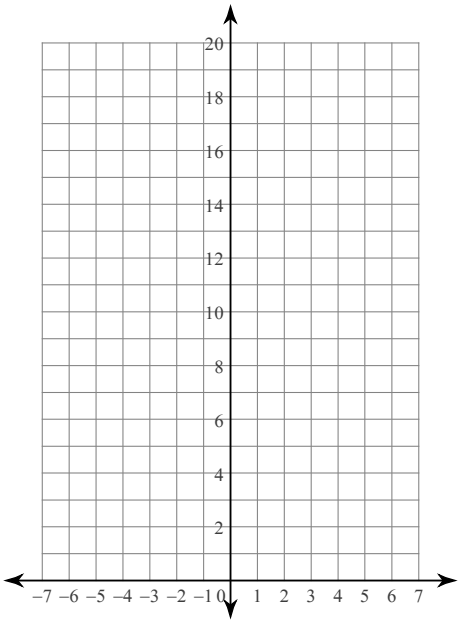
1460) $\dfrac{\sqrt{2}}{2} = \cos\theta$

Sketch the graph of each function.

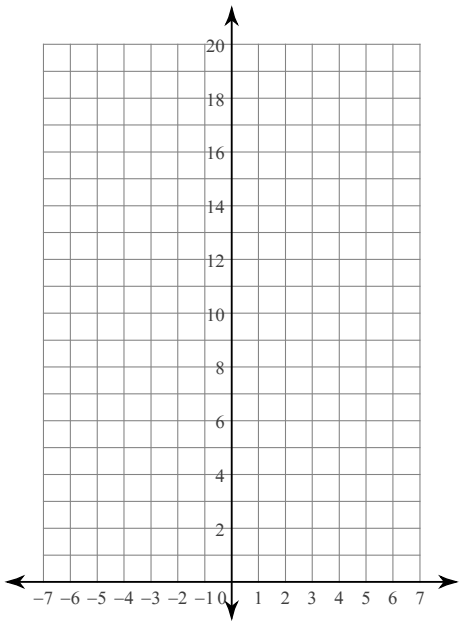
1461) $y = \dfrac{1}{3} \cdot 4^x$



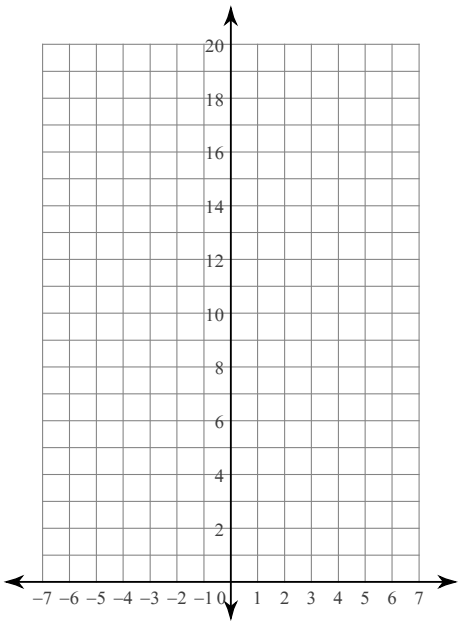
1462) $y = \dfrac{1}{2} \cdot 4^x$



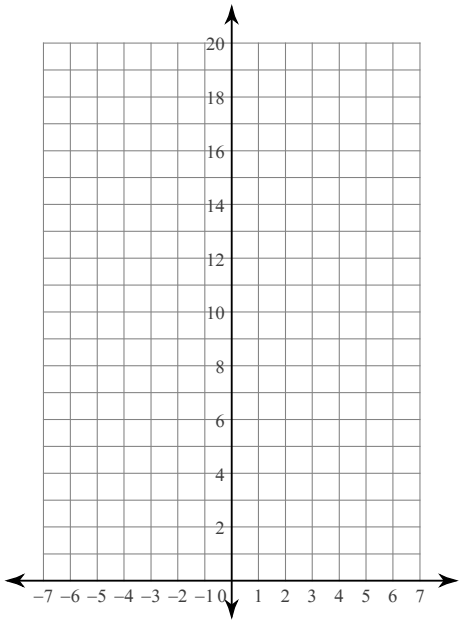
1463) $y = \frac{1}{2} \cdot \left(\frac{1}{4}\right)^x$



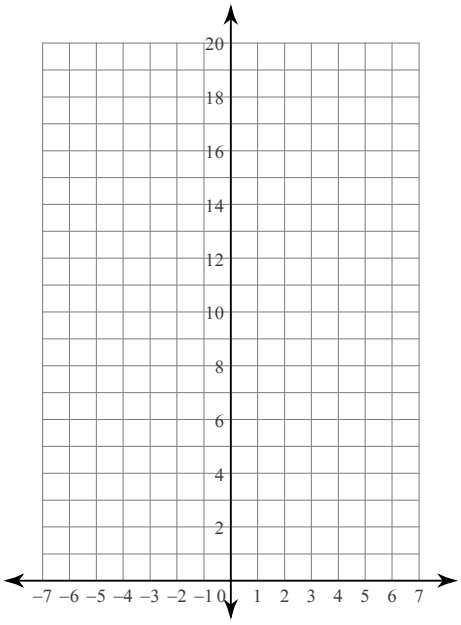
1464) $y = \frac{1}{2} \cdot \left(\frac{1}{3}\right)^x$



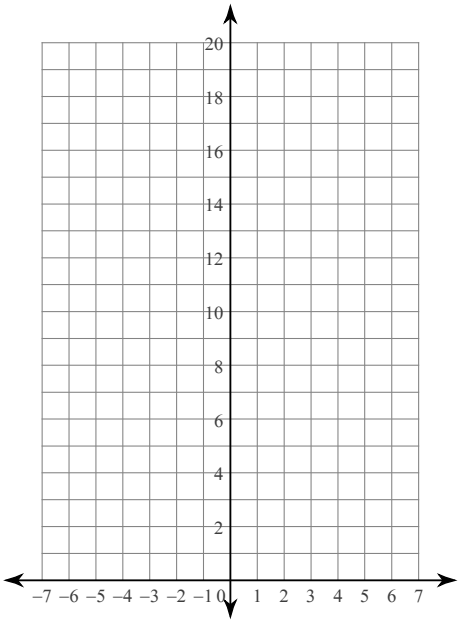
1465) $y = \frac{1}{4} \cdot \left(\frac{1}{4}\right)^x$



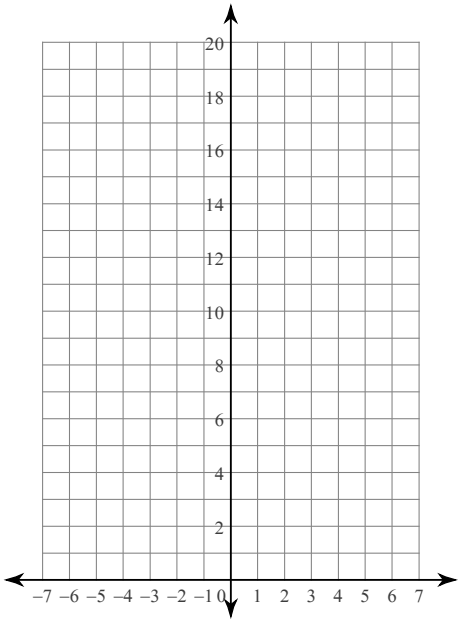
1466) $y = \frac{1}{4} \cdot \left(\frac{1}{3}\right)^x$



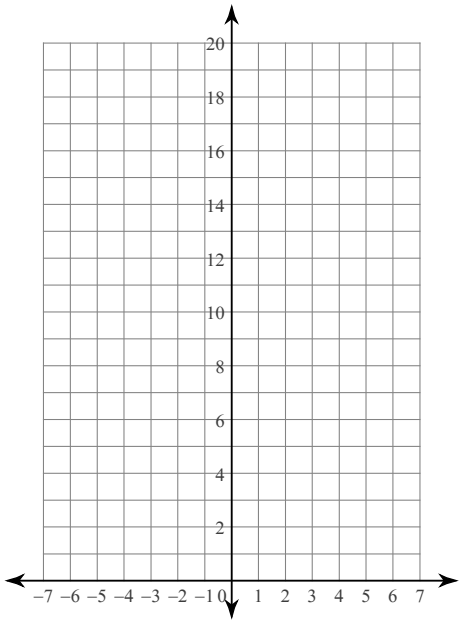
1467) $y = \frac{1}{4} \cdot 3^x$



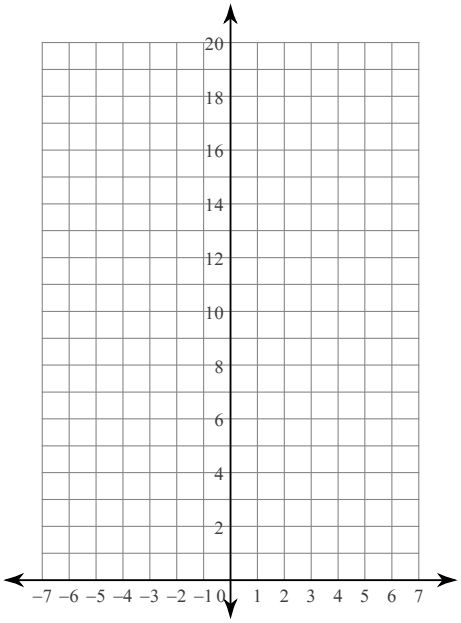
1468) $y = 4 \cdot \left(\frac{1}{2}\right)^x$



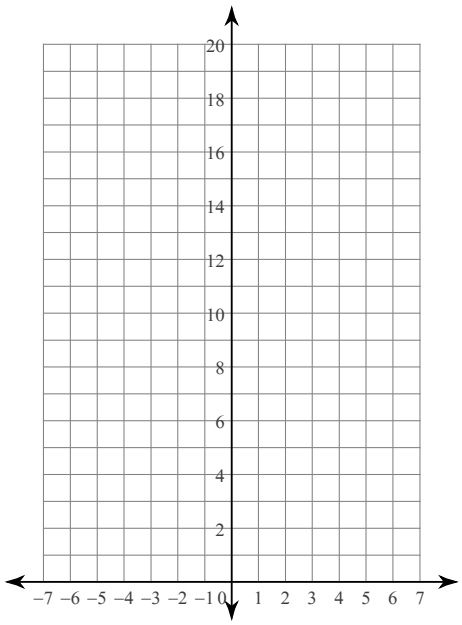
1469) $y = 5 \cdot \left(\frac{1}{2}\right)^x$



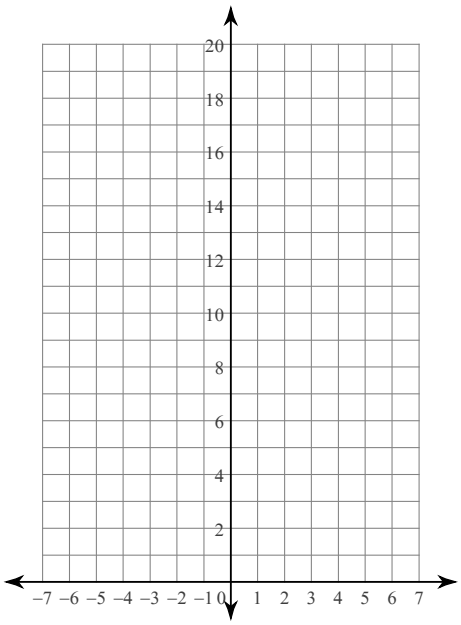
1470) $y = 5 \cdot 2^x$



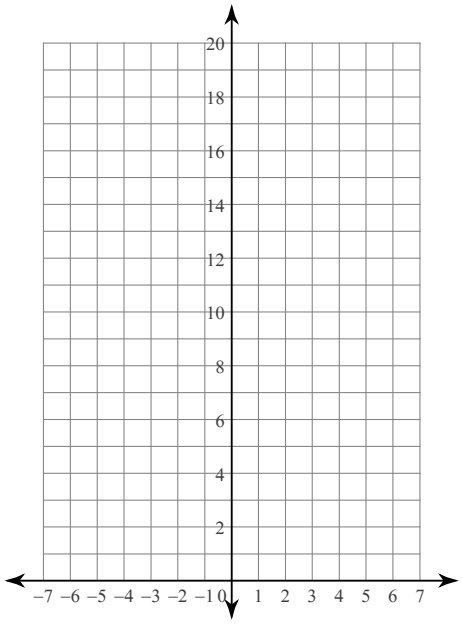
1471) $y = 5 \cdot \left(\frac{1}{2}\right)^x$



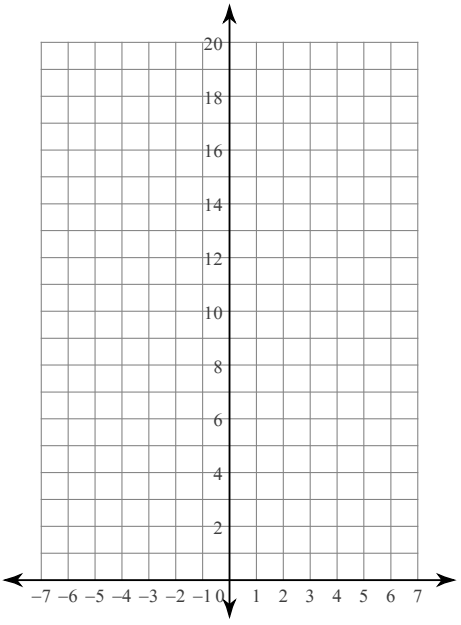
1472) $y = 2 \cdot \left(\frac{1}{3}\right)^x$



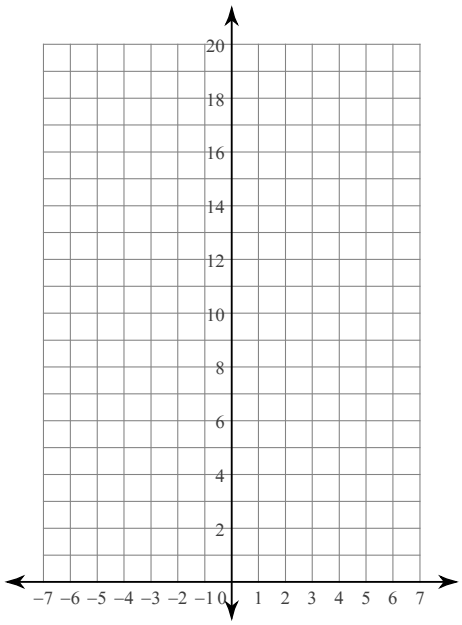
1473) $y = 3 \cdot \left(\frac{1}{2}\right)^x$



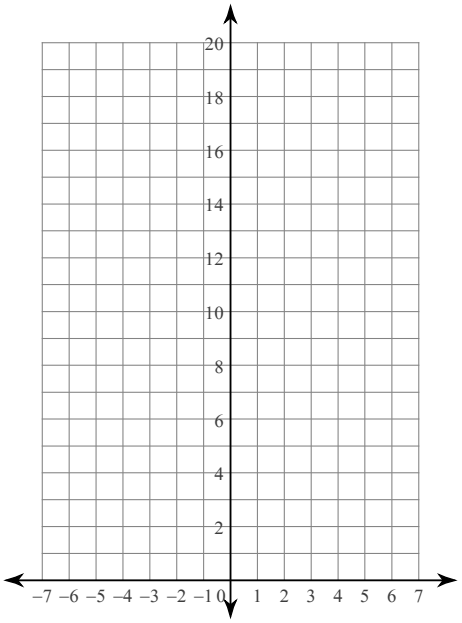
1474) $y = \frac{1}{4} \cdot 5^x$



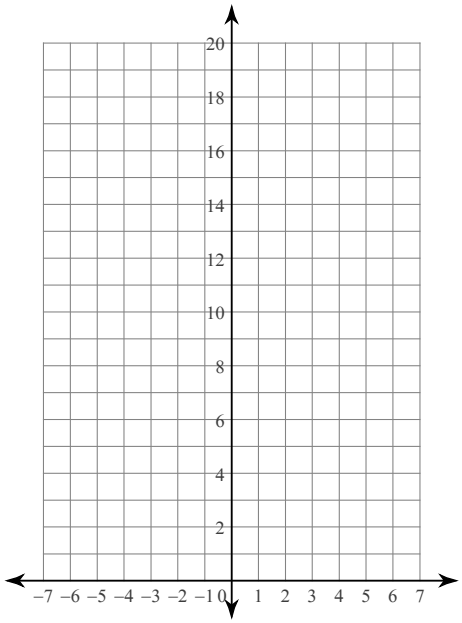
1475) $y = \frac{1}{4} \cdot \left(\frac{1}{6}\right)^x$



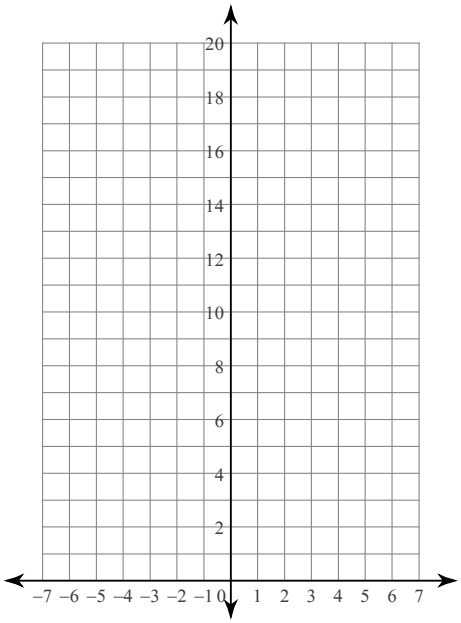
1476) $y = \frac{1}{3} \cdot 4^x$



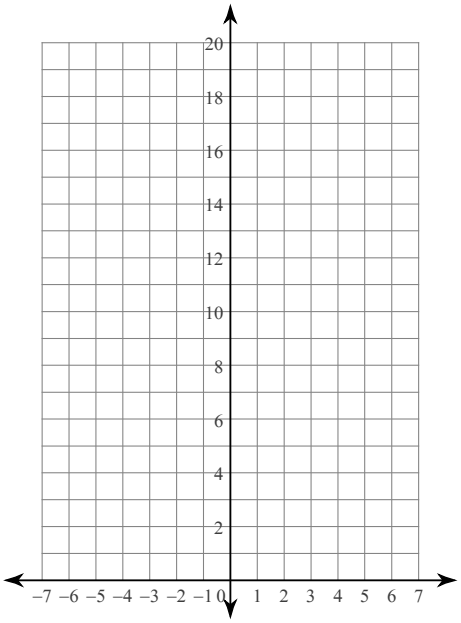
1477) $y = \frac{1}{2} \cdot \left(\frac{1}{2}\right)^x$



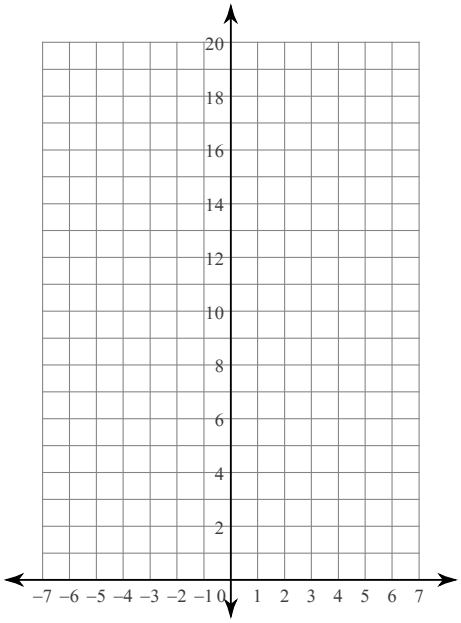
1478) $y = \frac{1}{3} \cdot \left(\frac{1}{7}\right)^x$



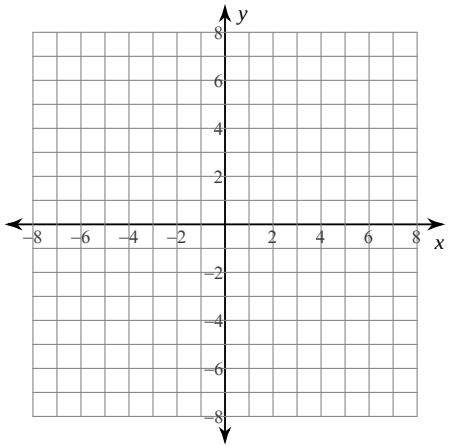
1479) $y = \frac{1}{2} \cdot 2^x$



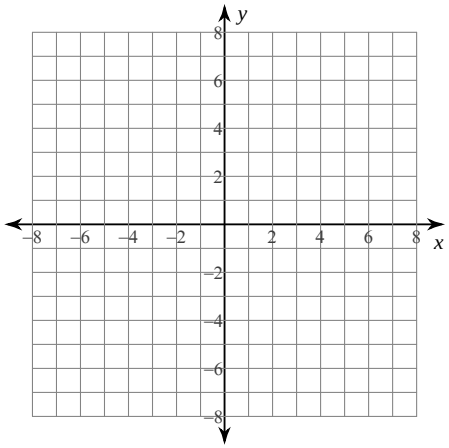
1480) $y = \frac{1}{2} \cdot \left(\frac{1}{3}\right)^x$



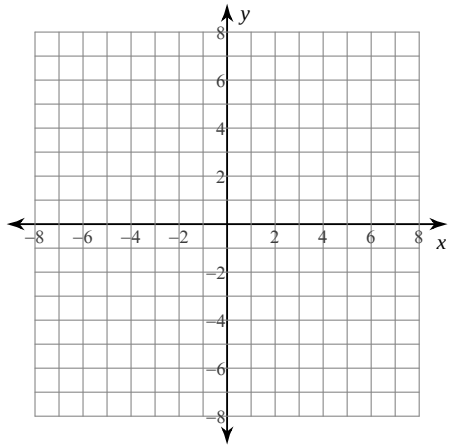
1481) $f(x) = -x^4 + 3x^2 - 2x$



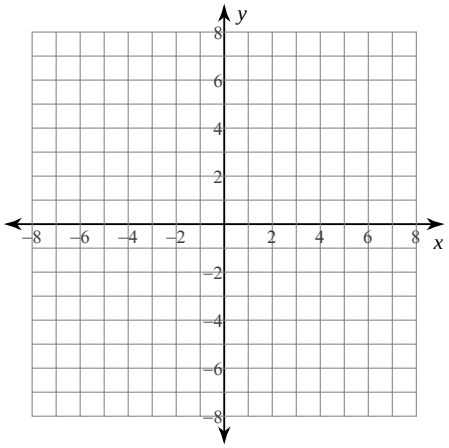
1482) $f(x) = x^4 - 2x^2$



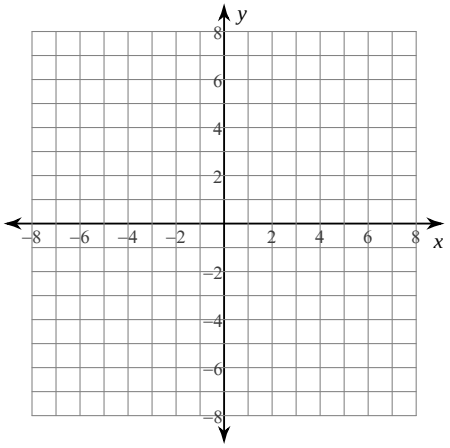
1483) $f(x) = x^3 - 3x^2 - 1$



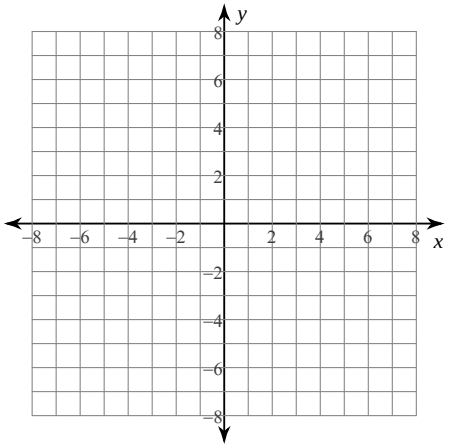
1484) $f(x) = x^4 - 2x^2 + 4$



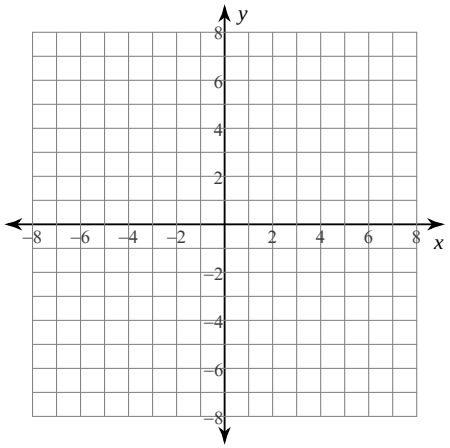
1485) $f(x) = x^4 - x^3 - 4x^2 + 5$



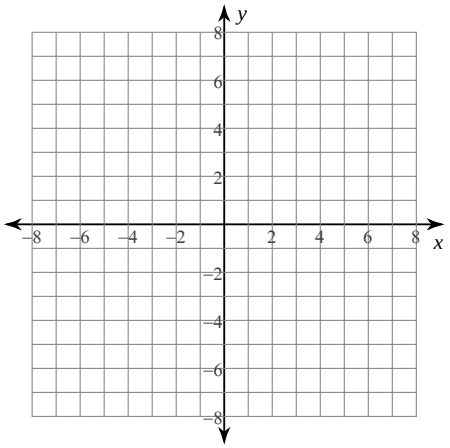
1486) $f(x) = x^4 + x^3 - 4x^2 + 4$



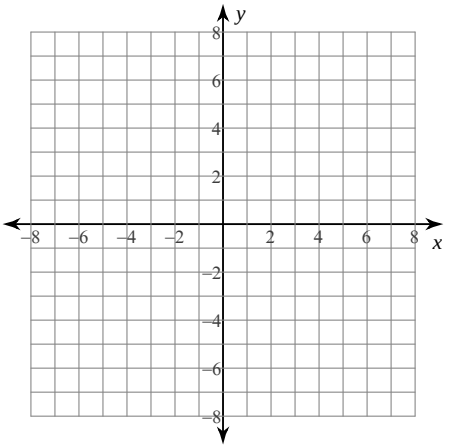
1487) $f(x) = -x^3 + 4x^2 - 7$



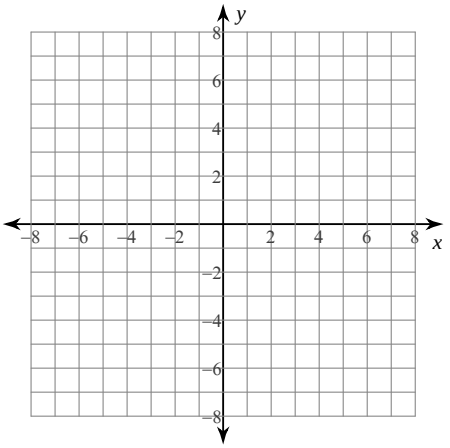
1488) $f(x) = x^4 - 3x^2 - 2$



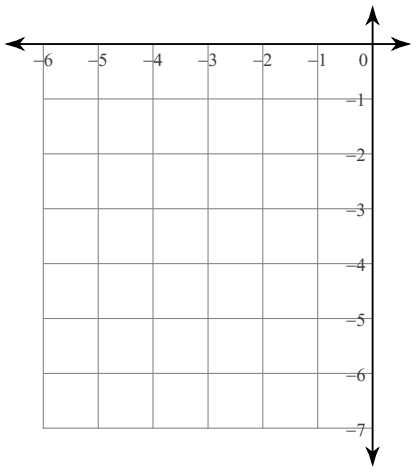
1489) $f(x) = x^3 - 7x^2 + 16x - 11$



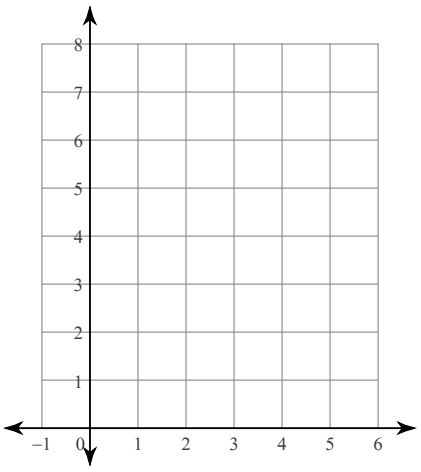
1490) $f(x) = x^3 + 11x^2 + 40x + 49$



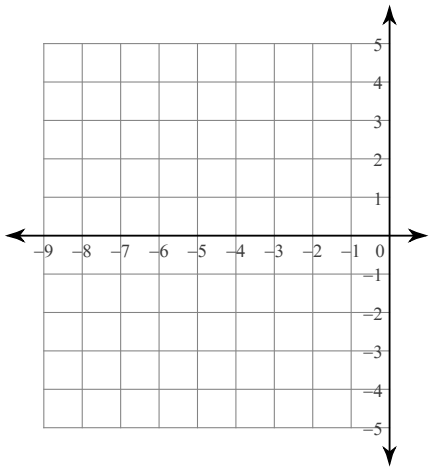
1491) $y = -x^2 - 4x - 6$



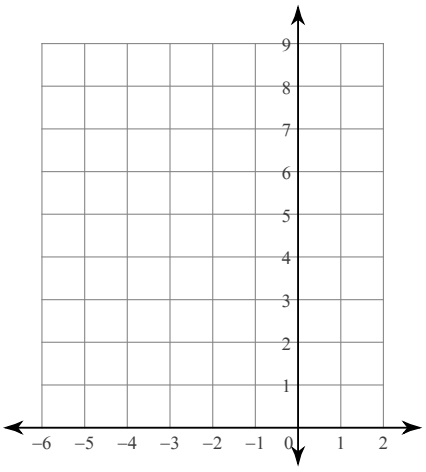
1492) $y = x^2 - 8x + 19$



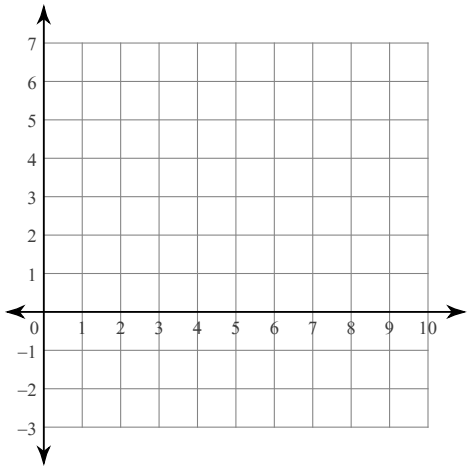
1493) $y = 2x^2 + 16x + 28$



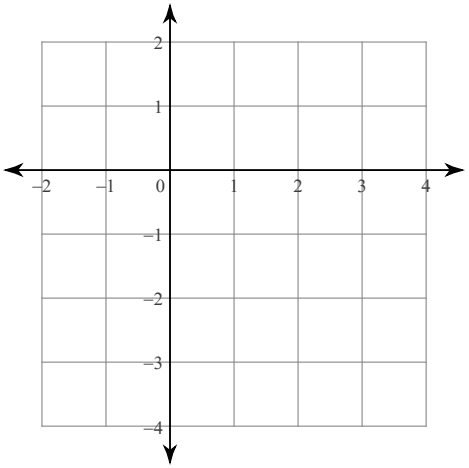
1494) $y = x^2 + 2x + 5$



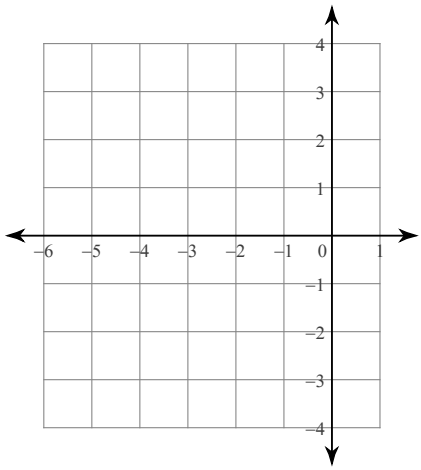
1495) $y = 2x^2 - 12x + 16$



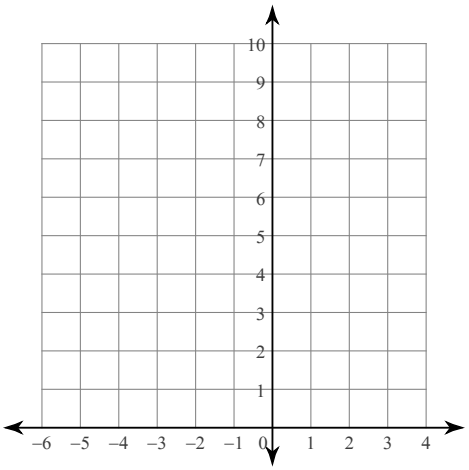
1496) $y = x^2 - 2x - 2$



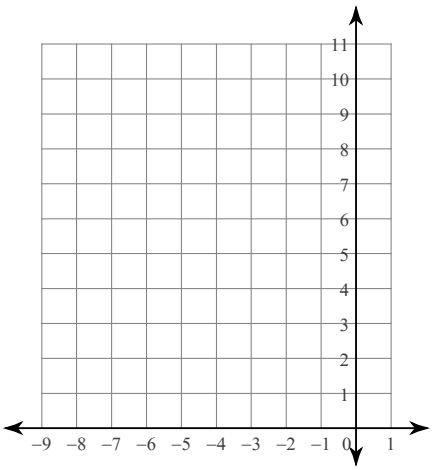
1497) $y = x^2 + 8x + 14$



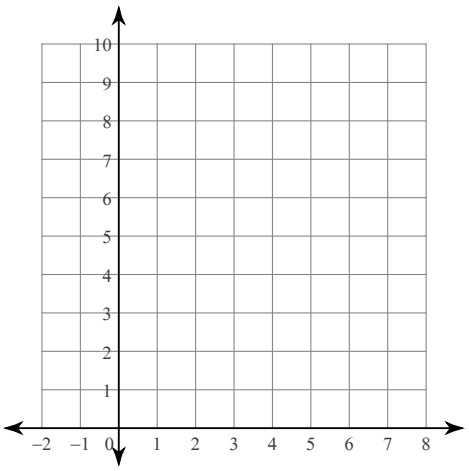
1498) $y = 2x^2 + 8x + 9$



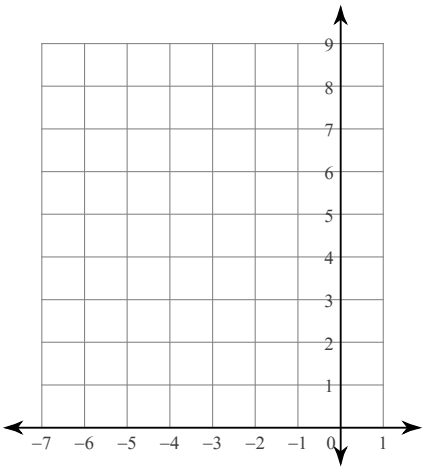
1499) $y = 2x^2 + 12x + 20$



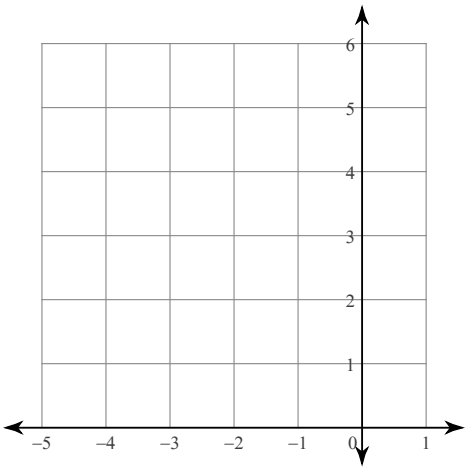
1500) $y = 2x^2 - 4x + 3$



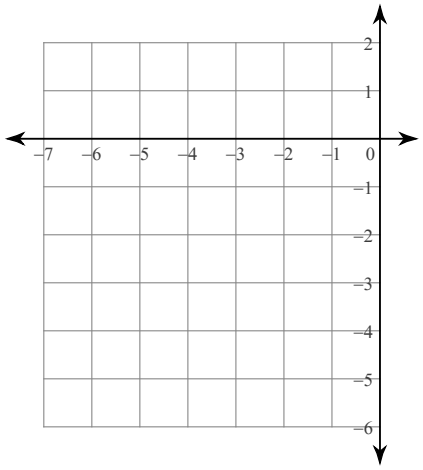
1501) $y \geq x^2 + 6x + 13$



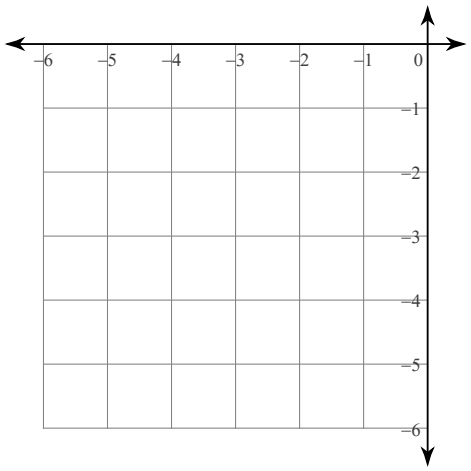
1502) $y < x^2 + 4x + 5$



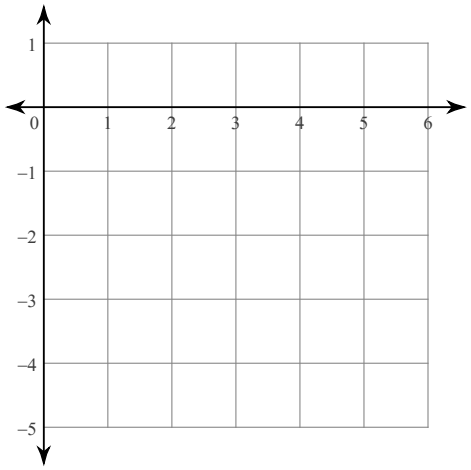
1503) $y > \frac{1}{2}x^2 + 4x + 5$



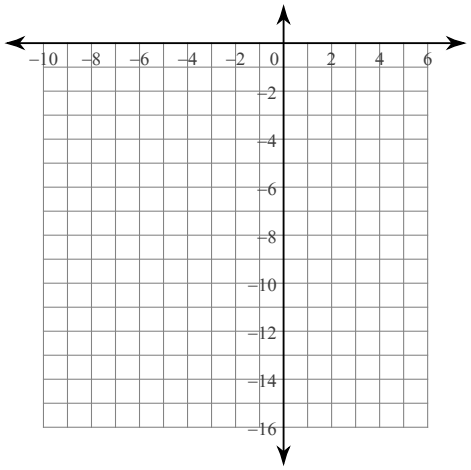
1504) $y \leq -x^2 - 4x - 5$



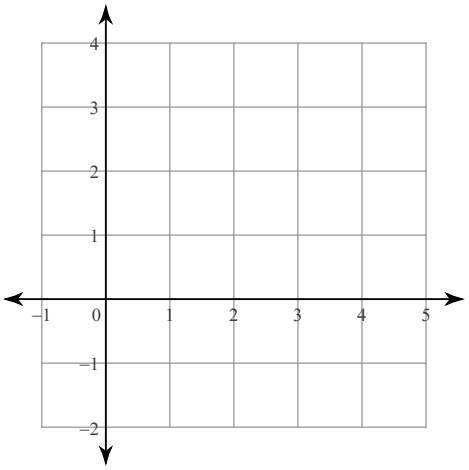
1505) $y < x^2 - 6x + 5$



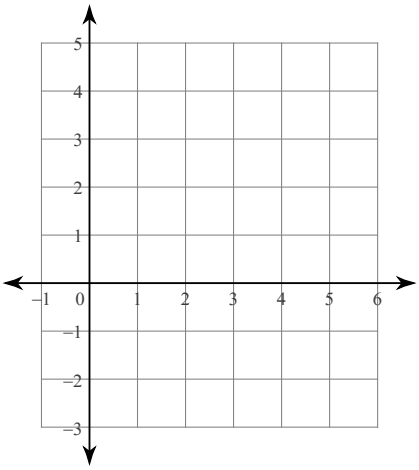
1506) $y \leq -3x^2 - 18x - 30$



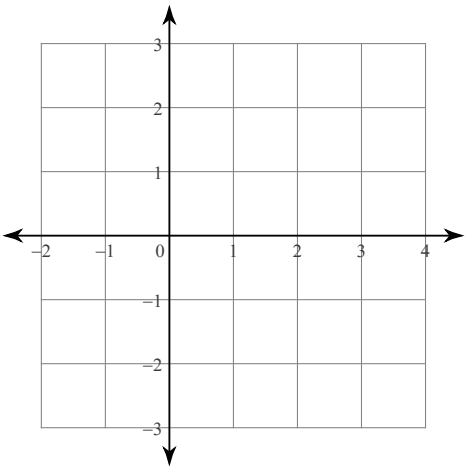
1507) $y \geq x^2 - 4x + 3$



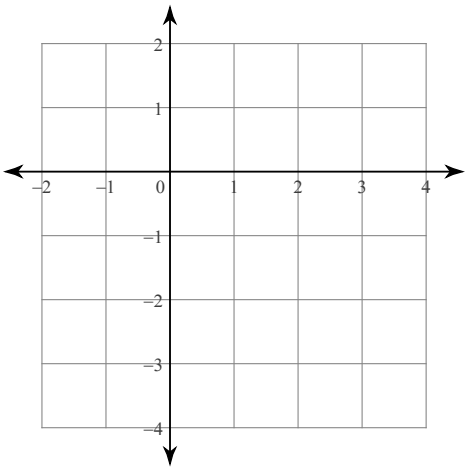
1508) $y > -x^2 + 8x - 13$



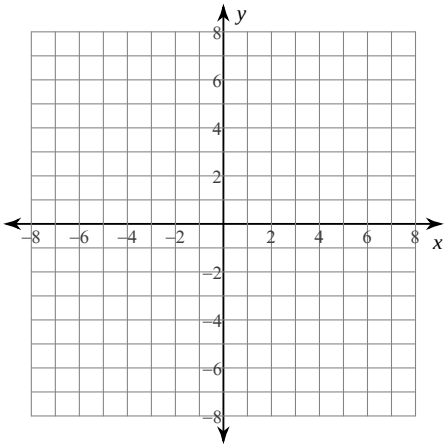
1509) $y > -x^2 + 2x + 1$



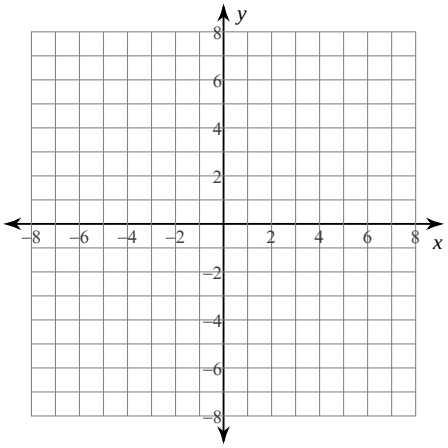
1510) $y \leq -x^2 + 2x$



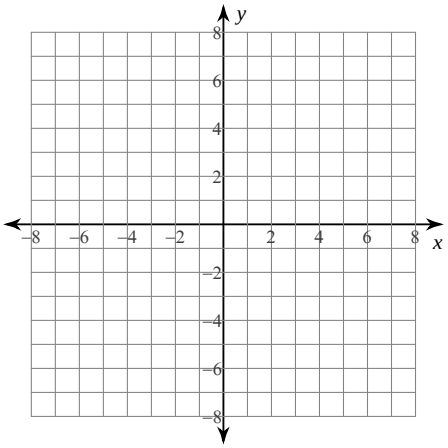
1511) $y = \sqrt{x}$



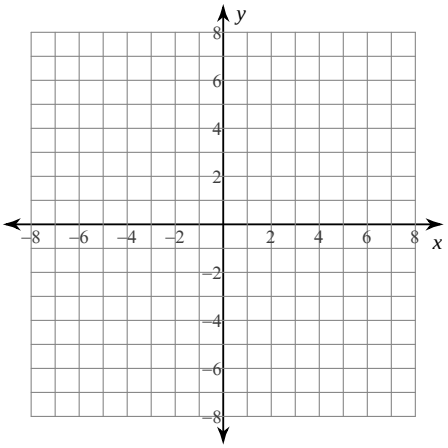
1512) $y = 2\sqrt{x}$



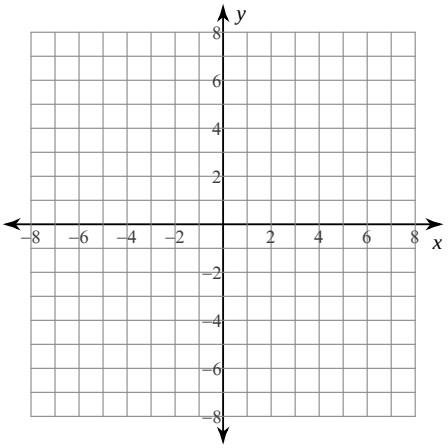
1513) $y = \frac{1}{2}\sqrt{x-2}$



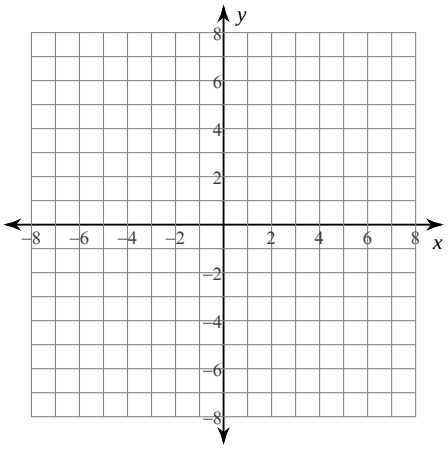
1514) $y = \frac{1}{2}\sqrt{x-2} + 1$



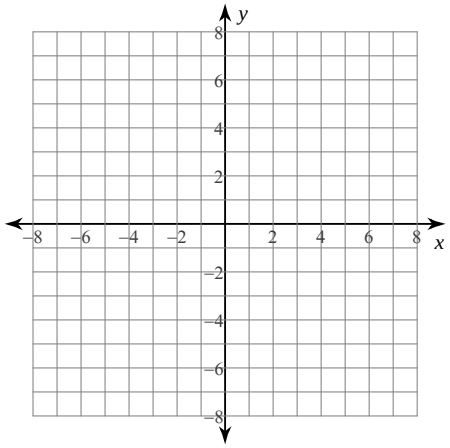
1515) $y = 2 + 2\sqrt{x}$



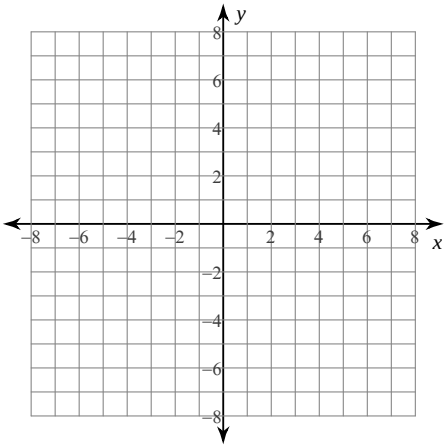
1516) $y = \frac{1}{2}\sqrt{x}$



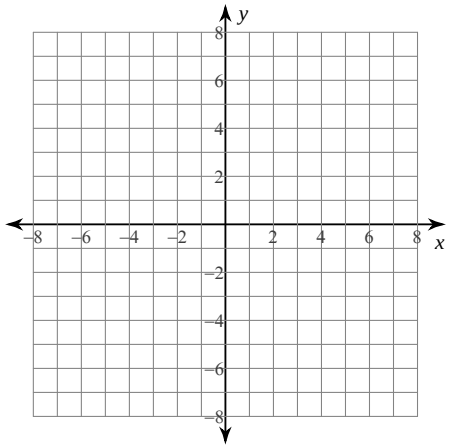
1517) $y = 3\sqrt{x} - 5$



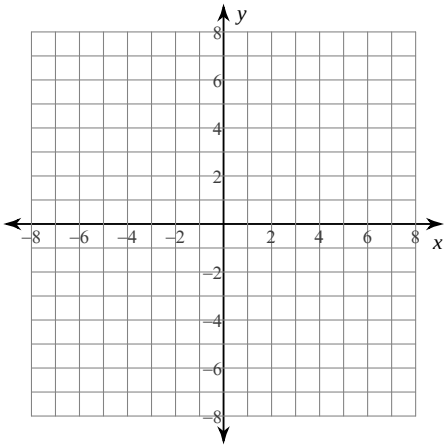
1518) $y = \sqrt{x-3} - 5$



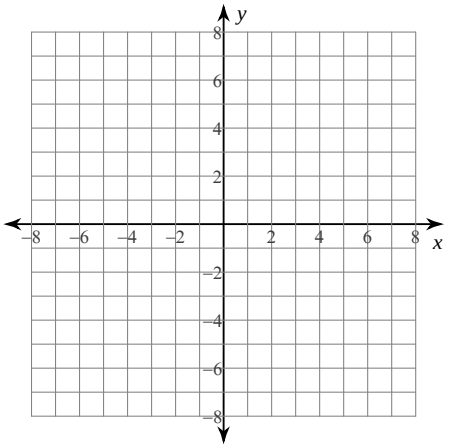
1519) $y = \frac{2}{3}\sqrt{x}$



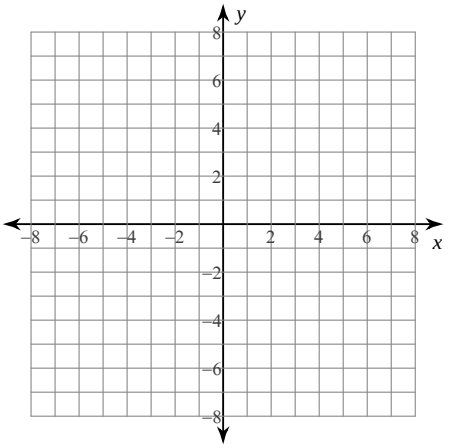
1520) $y = \sqrt{x-1}$



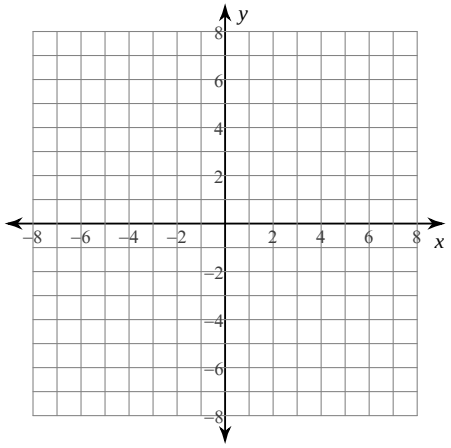
1521) $f(x) = -x^4 - x^3 + x^2 + 3$



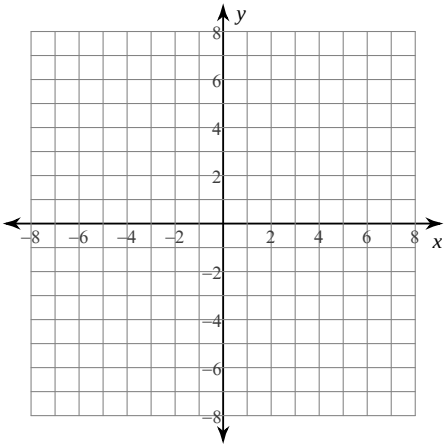
1522) $f(x) = x^4 - 4x^3 + 5x^2 - 2x + 3$



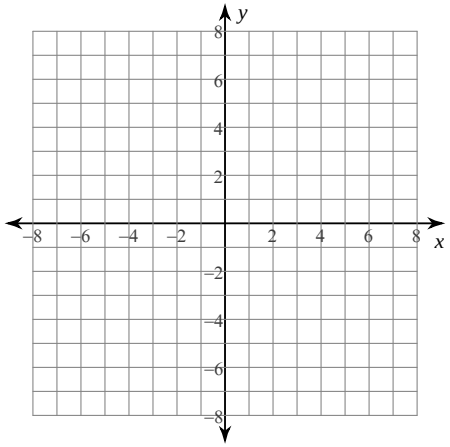
1523) $f(x) = x^3 - 3x^2 - 2$



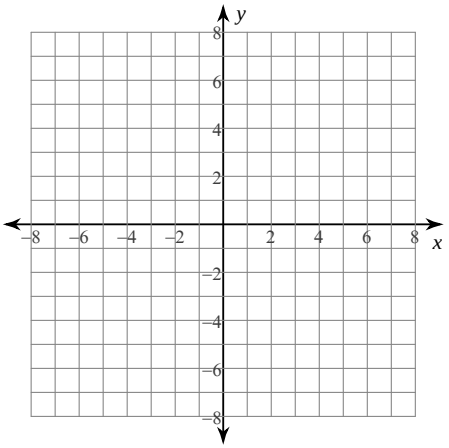
1524) $f(x) = x^4 - 4x^2 + 2x + 1$



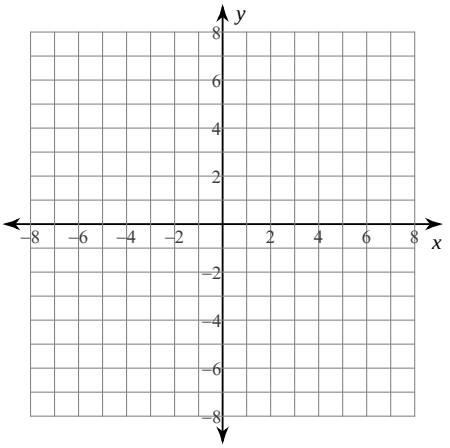
1525) $f(x) = x^4 - 3x^2 - x + 4$



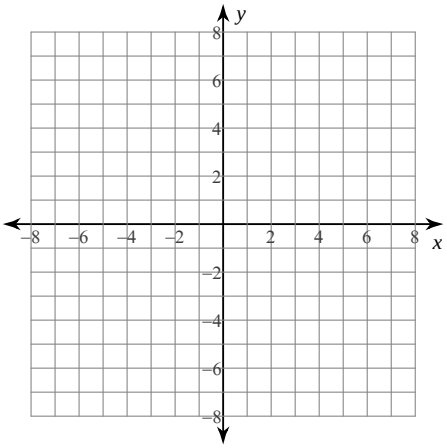
1526) $f(x) = x^4 + 4x^3 + 4x^2 - 3$



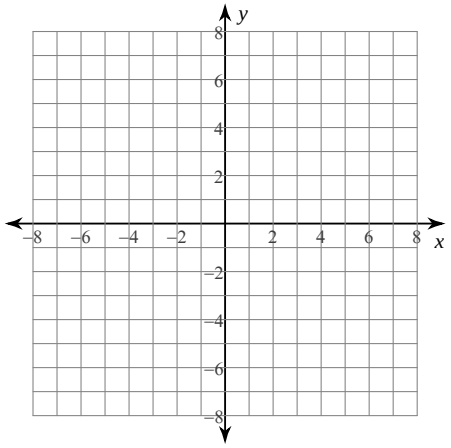
1527) $f(x) = -x^4 - 2x^3 + x^2 - 5$



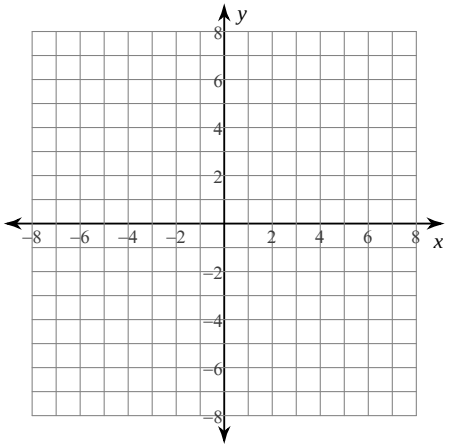
1528) $f(x) = x^3 + 2x^2 - 4x - 1$



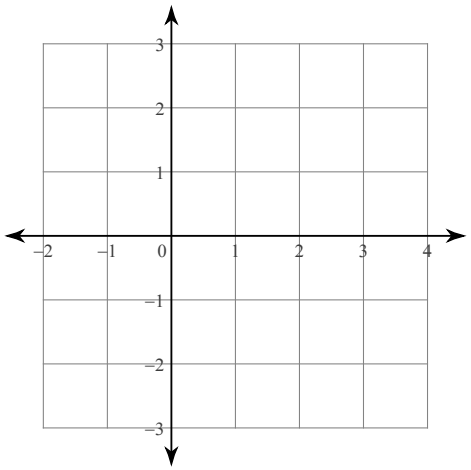
1529) $f(x) = x^3 - 4x^2 + 4$



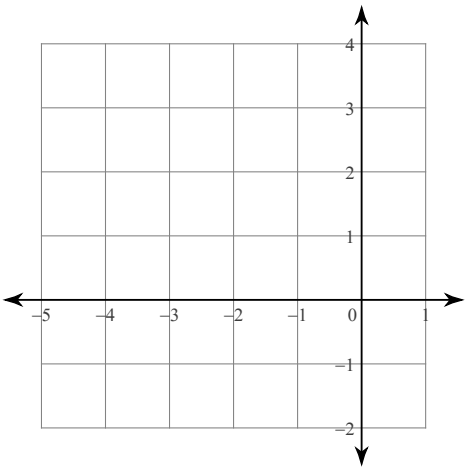
1530) $f(x) = x^3 - 3x^2 + 5$



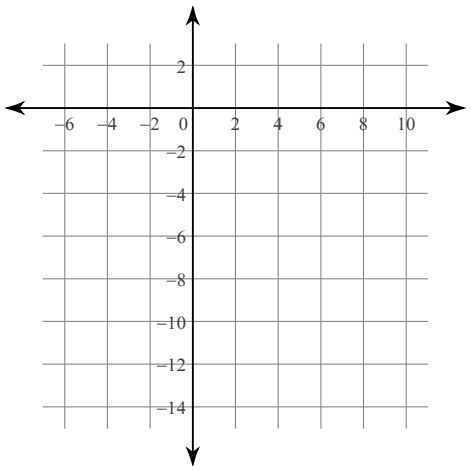
1531) $y = -x^2 + 4x - 2$



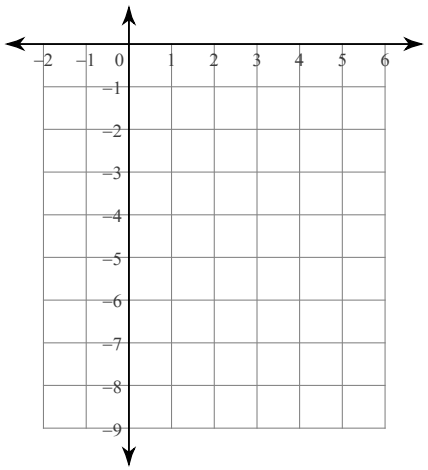
1532) $y = -x^2 - 6x - 6$



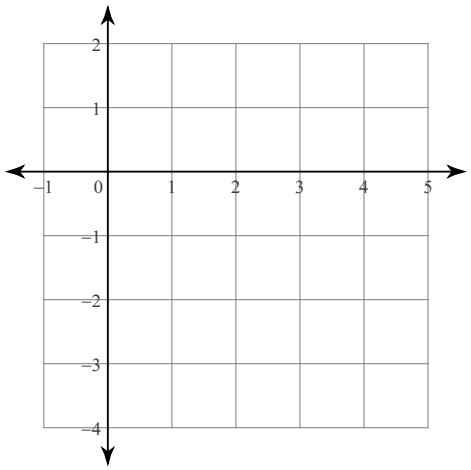
1533) $y = -4x^2 - 24x - 34$



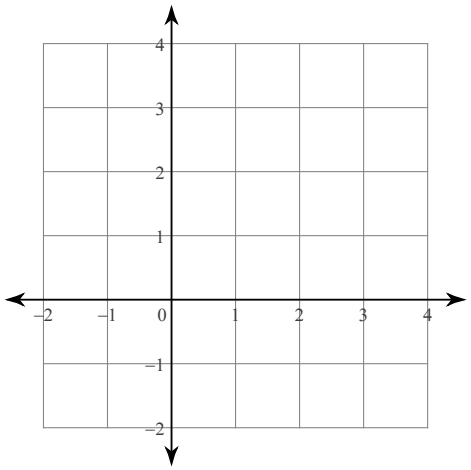
1534) $y = -x^2 + 2x - 5$



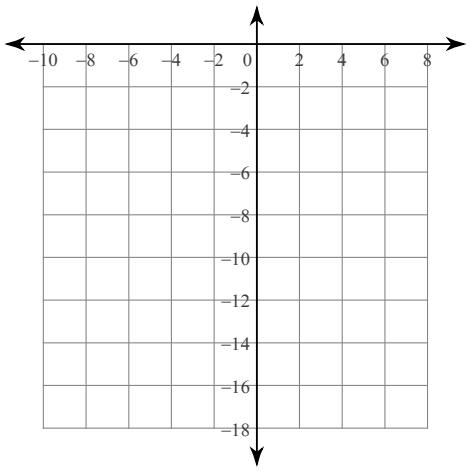
1535) $y = x^2 - 6x + 6$



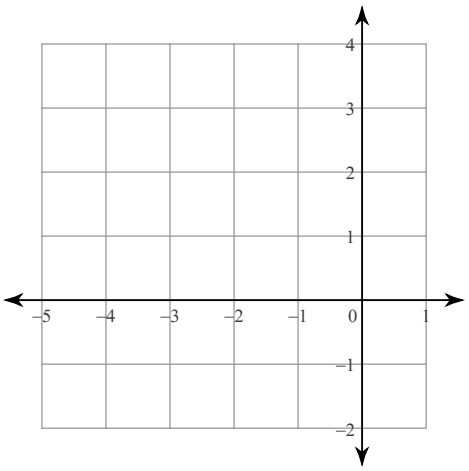
1536) $y = -x^2 + 2x + 2$



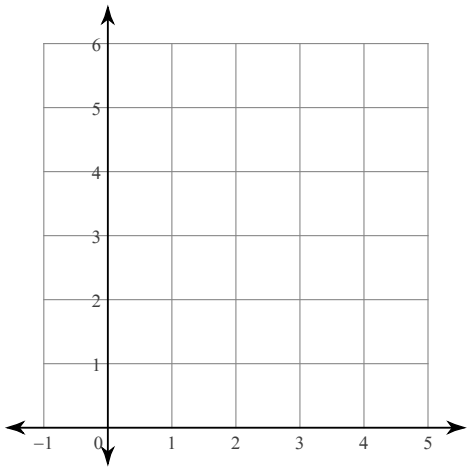
1537) $y = -4x^2 + 8x - 5$



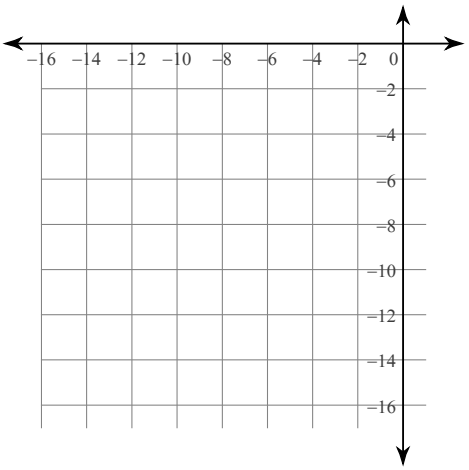
1538) $y = x^2 + 4x + 3$



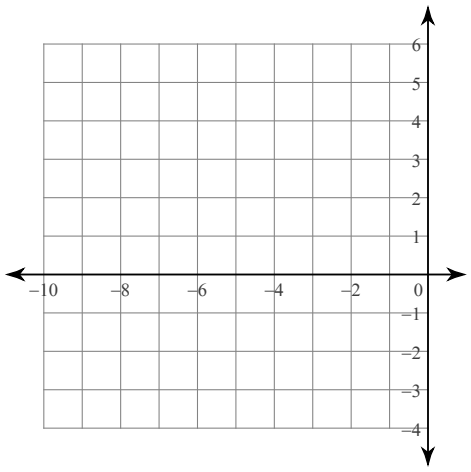
1539) $y = x^2 - 4x + 5$



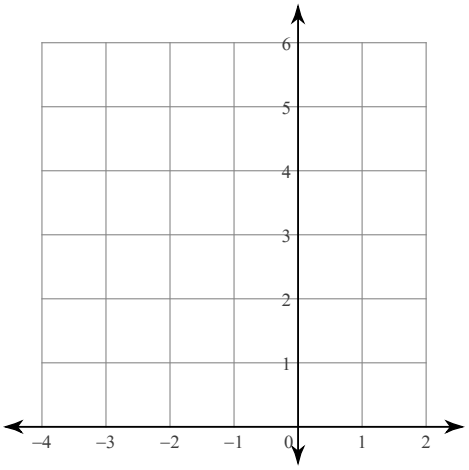
1540) $y = -3x^2 - 24x - 52$



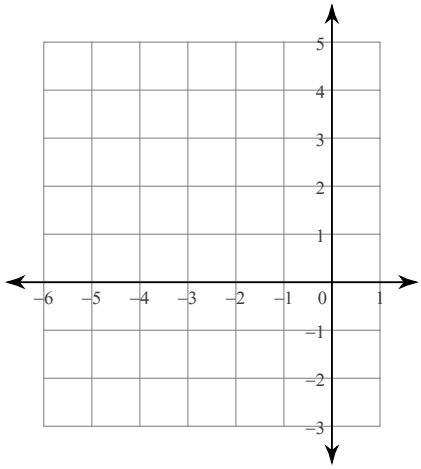
1541) $y \leq 2x^2 + 8x + 5$



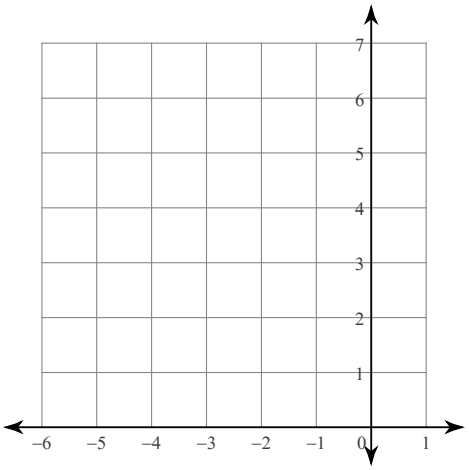
1542) $y > \frac{1}{2}x^2 + 2x + 5$



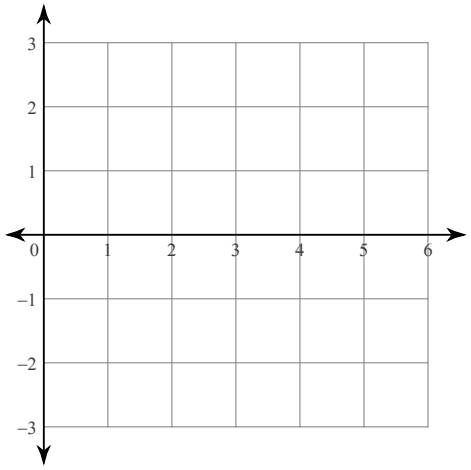
1543) $y \leq x^2 + 8x + 15$



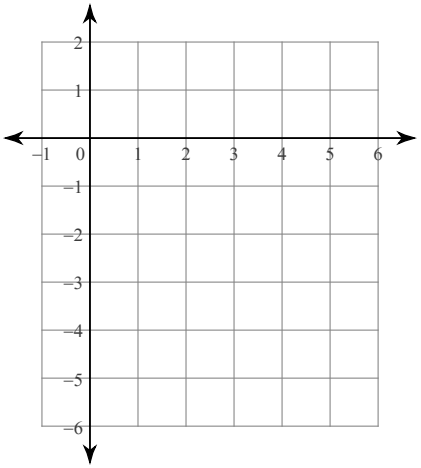
1544) $y < x^2 + 8x + 18$



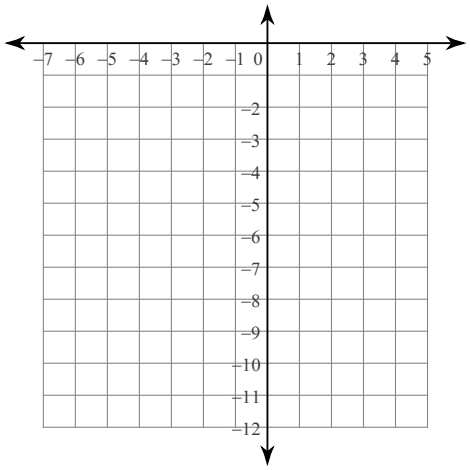
1545) $y > \frac{1}{2}x^2 - 2x + 1$



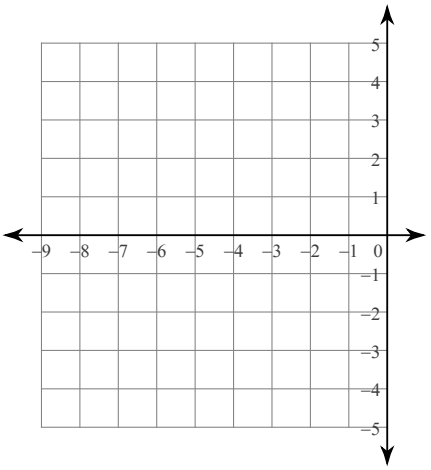
1546) $y \geq x^2 - 8x + 12$



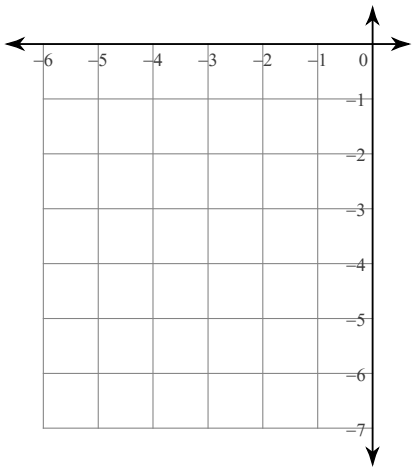
1547) $y > -2x^2 - 4x - 5$



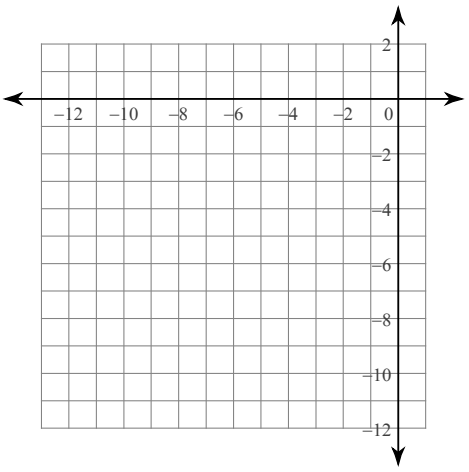
1548) $y \leq -2x^2 - 16x - 28$



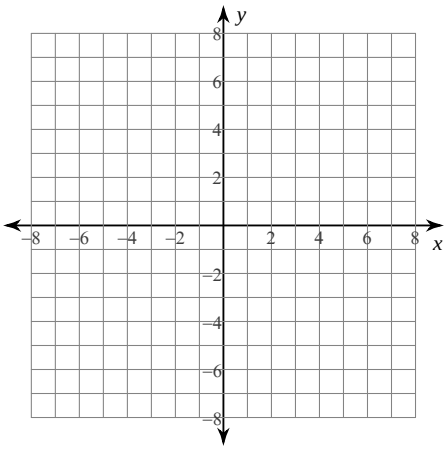
1549) $y < -x^2 - 6x - 11$



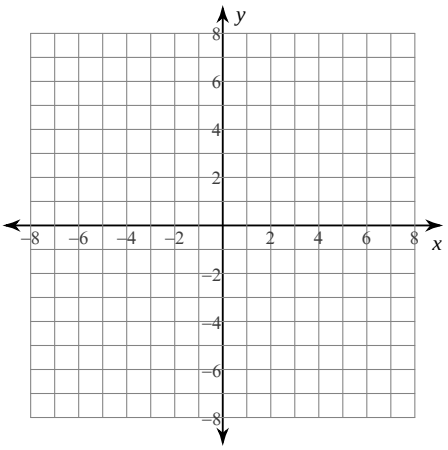
1550) $y < -3x^2 - 6x - 2$



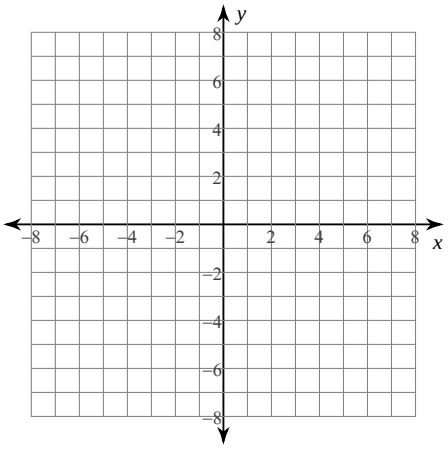
1551) $y = \sqrt{x + 1}$



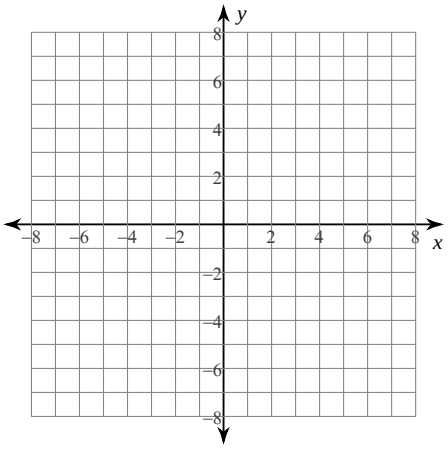
1552) $y = -3 + 2\sqrt{x}$



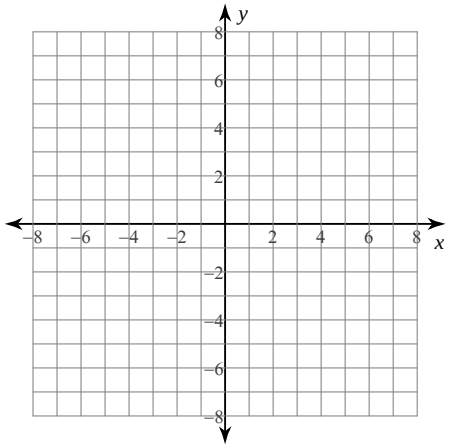
1553) $y = 2\sqrt{x + 1}$



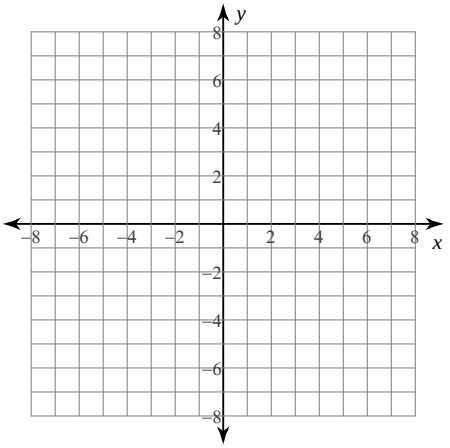
1554) $y = \sqrt{x}$



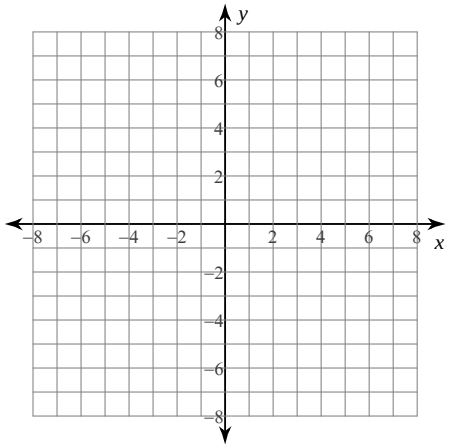
1555) $y = \sqrt{x} + 4$



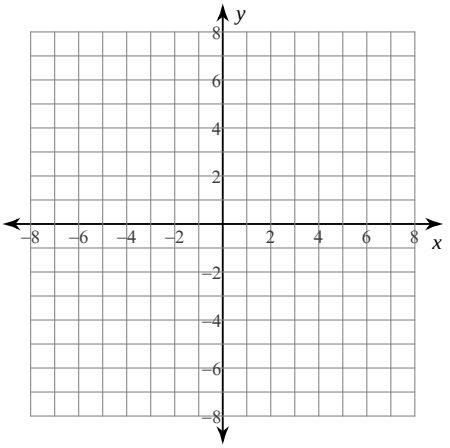
1556) $y = \sqrt{x} + 5$



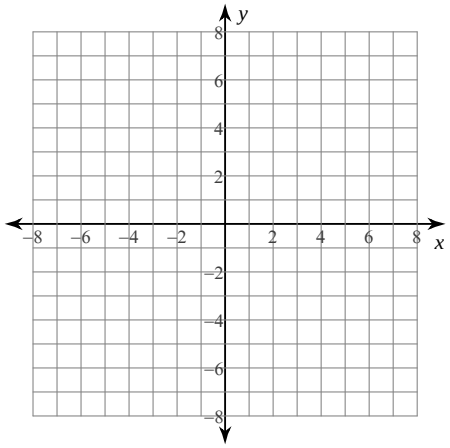
1557) $y = \sqrt{x} - 5$



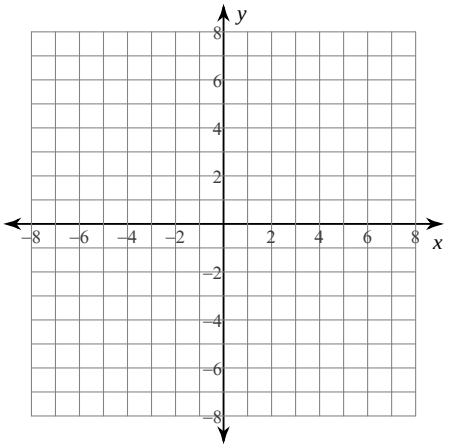
1558) $y = -4 + \sqrt{x + 6}$



1559) $y = \sqrt{x + 6} - 3$



1560) $y = \sqrt{x + 6}$



Find the inverse of each function.

1561) $y = -\dfrac{4^x}{2}$

1562) $y = \log_4 2^x$

1563) $y = \frac{2^x}{4}$

1564) $y = 3^x + 4$

1565) $y = 3^x - 10$

1566) $y = -\frac{6^x}{2}$

1567) $y = 2^x - 9$

1568) $y = \frac{-3 \cdot 2^{x+1} + 1}{2^x}$

1569) $y = \frac{1}{4 \cdot 5^x}$

1570) $y = \frac{6 \cdot 5^x + 1}{5^x}$

1571) $f(x) = -3 - \frac{1}{2}x$

1572) $f(x) = -x^3 + 3$

1573) $f(n) = \frac{8n + 12}{7}$

1574) $f(x) = \sqrt[3]{x} - 2$

1575) $h(x) = 2x^3$

1576) $h(x) = \sqrt[3]{\frac{x-3}{2}}$

1577) $h(x) = -\frac{1}{x-2} + 1$

1578) $f(x) = \frac{3}{-x+1} + 1$

1579) $g(n) = -\dfrac{3}{n-2}$

1580) $g(x) = -\dfrac{2}{9}x + \dfrac{8}{9}$

1581) $y = \log_6 (x+8)$

1582) $y = \log_3 x^5$

1583) $y = \log_6 x - 9$

1584) $y = \log 5^x$

1585) $y = \log_{\frac{1}{3}} (-4x)$

1586) $y = \log_5 x^4$

1587) $y = -6\log_6 x$

1588) $y = \log_6 (-3x)$

1589) $y = \log_6 (x+10)$

1590) $y = -6\log_5 x$

Simplify. Your answer should contain only positive exponents.

1591) $xy \cdot 3y$

1592) $2ab^4 \cdot 3b^4$

1593) $3x^{-2} \cdot 3xy^{-2}$

1594) $4a^4b^{-2} \cdot 3a^2b^3 \cdot 2ba^{-3}$

1595) $3x^{-3}y^3 \cdot 4x^3y^2$

1596) $m^2 \cdot 4m$

1597) $2x^4y^4 \cdot 4x^3y^4$

1598) $2nm^2 \cdot 4m^2n^4$

1599) $4x^4 \cdot 2x^4y^4 \cdot 3x^4$

1600) $4x^4y^{-2} \cdot y^{-3}$

Factor each completely.

1601) $10a^3 - 5a^2 - 6a + 3$

1602) $7k^3 - 5k^2 - 42k + 30$

1603) $3x^3 + 12x^2 - 8x - 32$

1604) $42p^3 + 48p^2 - 7p - 8$

1605) $15m^3 + 9m^2 - 5m - 3$

1606) $15n^3 + 35n^2 + 21n + 49$

1607) $56r^3 - 49r^2 + 32r - 28$

1608) $12x^3 + 8x^2 + 3x + 2$

1609) $8b^3 - 28b^2 + 6b - 21$

1610) $12n^3 + 14n^2 - 18n - 21$

1611) $a^2 - 9a + 14$

1612) $x^2 - 8x + 15$

1613) $4n^2 + 16n$

1614) $p^2 + 4p + 3$

1615) $3m^2 + 12m - 96$

1616) $n^2 - 18n + 80$

1617) $r^2 - 6r - 7$

1618) $n^3 - 5n^2 + 6n$

1619) $n^2 - 8n + 12$

1620) $k^2 + 7k + 12$

1621) $5x^4 - 85x^2 + 350$

1622) $x^4 + 4x^2 - 12$

1623) $u^4 + 6u^2 + 8$

1624) $2x^4 + 8x^2 - 10$

1625) $6a^4 + 6a^2 - 12$

1626) $a^4 - a^2 - 90$

1627) $6m^4 - 12m^2 - 480$

1628) $4x^4 - 80x^2 + 400$

1629) $x^4 + 3x^2 - 4$

1630) $m^4 + 4m^2 - 21$

1631) $9a^2 - 1$

1632) $16k^2 - 40k + 25$

1633) $4x^2 - 9$

1634) $x^2 - 4$

1635) $9n^2 + 6n + 1$

1636) $p^2 + 4p + 4$

1637) $4x^2 + 12x + 9$

1638) $4b^2 + 20b + 25$

1639) $r^2 - 9$

1640) $x^2 - 10x + 25$

1641) $108 + 4x^3$

1642) $3m^3 + 3$

1643) $1 + 216x^3$

1644) $2m^3 + 16$

1645) $1 + 64x^3$

1646) $64x^3 + 27$

1647) $x^3 + 125$

1648) $192u^3 + 3$

1649) $500 + 864x^3$

1650) $2u^3 + 54$

Factor each.

1651) $x^6 - 3x^4 - 16x^2 + 48 = 0$

1652) $x^6 + 2x^4 - 9x^2 - 18 = 0$

1653) $x^8 - 18x^4 + 81 = 0$

1654) $x^8 - 34x^4 + 225 = 0$

1655) $x^6 - 64 = 0$

1656) $x^6 - 1 = 0$

1657) $x^8 - 5x^4 + 4 = 0$

1658) $x^6 - 126x^3 + 125 = 0$

1659) $x^6 - 65x^3 + 64 = 0$

1660) $x^8 - 20x^4 + 64 = 0$

1661) $x^6 + 5x^4 - 25x^2 - 125 = 0$

1662) $x^6 + x^4 - x^2 - 1 = 0$

1663) $x^8 - 17x^4 + 16 = 0$

1664) $x^8 - 10x^4 + 9 = 0$

1665) $x^8 - 25x^4 + 144 = 0$

1666) $x^8 - 5x^4 + 4 = 0$

1667) $x^6 - 26x^3 - 27 = 0$

1668) $x^6 - 7x^3 - 8 = 0$

1669) $x^8 - 13x^4 + 36 = 0$

1670) $x^8 - 26x^4 + 25 = 0$

Evaluate each function.

1671) $h(x) = x^3 - 3x$; Find $h(3)$

1672) $g(a) = a^2 + 2a$; Find $g(9)$

1673) $f(n) = 2n + 1$; Find $f(6)$

1674) $p(x) = x^2 - 5$; Find $p(-5)$

1675) $p(a) = 2a - 1$; Find $p(2)$

1676) $h(n) = 4n - 1$; Find $h(-7)$

1677) $f(n) = n^3 - 2$; Find $f(2)$

1678) $f(x) = 2x + 1$; Find $f(0)$

1679) $f(x) = 2x + 1$; Find $f(4)$

1680) $g(x) = x^3 + 2 - x$; Find $g(4)$

Perform the indicated operation.

1681) $g(x) = x + 3$
$h(x) = x - 3$
Find $(g + h)(x)$

1682) $h(n) = 2n + 3$
$g(n) = 4n - 1$
Find $\left(\frac{h}{g}\right)(n)$

1683) $g(x) = 4x + 2$
$h(x) = x^3 + x^2$
Find $(g - h)(x)$

1684) $h(a) = -4a + 1$
$g(a) = a^2 + 2a$
Find $(h \circ g)(a)$

1685) $g(t) = 4t + 1$
$h(t) = t^2 + 2 - t$
Find $(g - h)(t)$

1686) $f(a) = 2a + 1$
$g(a) = a^2 - 2$
Find $(f \circ g)(a)$

1687) $g(n) = 3n$
$h(n) = 3n + 3$
Find $(g \cdot h)(n)$

1688) $g(t) = 2t^2 - 4$
$h(t) = t + 3$
Find $(-3g - 3h)(t)$

1689) $g(n) = 4n + 5$
$f(n) = 3n + 4$
Find $(g \cdot f)(n)$

1690) $h(n) = 2n^3 + 2$
$g(n) = 2n - 2$
Find $\left(\frac{h}{g}\right)(n)$

State the number of complex zeros, the possible number of real and imaginary zeros, and the possible rational zeros for each function. Then find all zeros.

1691) $f(x) = x^3 + 5x^2 - x - 5$

1692) $f(x) = x^5 + 5x^4 + 12x^3 + 60x^2 + 27x + 135$

1693) $f(x) = x^3 + 11x^2 - 25x + 13$

1694) $f(x) = x^4 - 3x^2 - 4$

1695) $f(x) = x^4 - 10x^2 + 16$

1696) $f(x) = x^4 - 12x^2 + 32$

1697) $f(x) = x^4 - 4x^2 - 21$

1698) $f(x) = x^5 + 5x^4 + 9x^3 + 45x^2 + 14x + 70$

1699) $f(x) = x^5 - 2x^4 + 9x^3 - 18x^2 + 8x - 16$

1700) $f(x) = x^5 - 3x^4 + x^3 - 3x^2 - 12x + 36$

1701) $f(x) = x^4 + 7x^2 - 8$

1702) $f(x) = x^4 + 5x^2 - 36$

1703) $f(x) = x^4 - 2x^2 - 24$

1704) $f(x) = x^4 - x^2 - 12$

1705) $f(x) = x^5 + 3x^4 + 15x^3 + 45x^2 + 54x + 162$

1706) $f(x) = x^5 + 5x^4 - 9x^3 - 45x^2 + 14x + 70$

1707) $f(x) = x^5 - 2x^4 - x^3 + 2x^2 - 20x + 40$

1708) $f(x) = x^5 + 5x^4 - x^3 - 5x^2 - 2x - 10$

1709) $f(x) = x^3 + 8$

1710) $f(x) = x^3 - 8$

Find the missing term or terms in each geometric sequence.

1711) ..., 1, ___, 25, ...

1712) ..., −4, ___, −144, ...

1713) ..., −3, ___, −12, ...

1714) ..., −2, ___, −32, ...

1715) ..., 4, ___, 36, ...

1716) ..., 3, ___, 108, ...

1717) ..., −2, ___, −50, ...

1718) ..., 3, ___, 12, ...

1719) ..., 1, ___, 4, ...

1720) ..., 3, ___, 48, ...

Determine if the sequence is geometric. If it is, find the common ratio, the 8th term, and the explicit formula.

1721) 1, 5, 25, 125, ...

1722) 2, −4, 8, −16, ...

1723) 3, −12, 48, −192, ...

1724) −1, −4, −16, −64, ...

1725) −3, 12, −48, 192, ...

1726) −1, 3, −9, 27, ...

1727) −1, 4, −16, 64, ...

1728) 4, 16, 64, 256, ...

1729) −2, −8, −32, −128, ...

1730) −2, 6, −18, 54, ...

1731) 1, 5, 25, 125, ...

1732) 1, −4, 16, −64, ...

1733) 1, 9, 25, 49, ...

1734) −7, −10, −13, −16, ...

1735) −1, −2, −6, −24, ...

1736) −1, 3, −9, 27, ...

1737) $-20,\ -30,\ -40,\ -50,\ ...$

1738) $-1,\ -4,\ -16,\ -64,\ ...$

1739) $-2,\ 4,\ -8,\ 16,\ ...$

1740) $-2,\ 6,\ -18,\ 54,\ ...$

Evaluate each geometric series described.

1741) $-3 - 9 - 27 - 81...,\ n = 6$

1742) $-2 + 6 - 18 + 54...,\ n = 7$

1743) $-3 - 12 - 48 - 192...,\ n = 9$

1744) $-4 - 8 - 16 - 32...,\ n = 7$

1745) $-3 - 6 - 12 - 24...,\ n = 6$

1746) $-3 - 6 - 12 - 24...,\ n = 9$

1747) $-4 - 12 - 36 - 108...,\ n = 8$

1748) $-4 + 24 - 144 + 864...,\ n = 6$

1749) $4 + 8 + 16 + 32...,\ n = 7$

1750) $4 + 8 + 16 + 32...,\ n = 8$

1751) $-2 + 10 - 50 + 250...,\ n = 9$

1752) $-1 - 6 - 36 - 216...,\ n = 6$

1753) $-2 + 10 - 50 + 250...,\ n = 7$

1754) $-3 - 15 - 75 - 375...,\ n = 6$

1755) $-2 - 4 - 8 - 16...,\ n = 8$

1756) $-3 + 12 - 48 + 192...,\ n = 7$

1757) $-3 - 12 - 48 - 192...,\ n = 6$

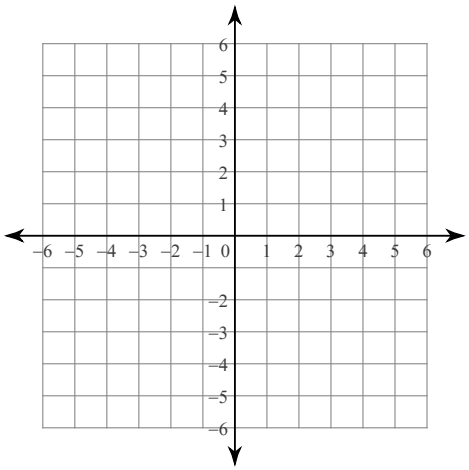
1758) $-4 - 16 - 64 - 256...,\ n = 9$

1759) $-4 - 20 - 100 - 500...,\ n = 8$

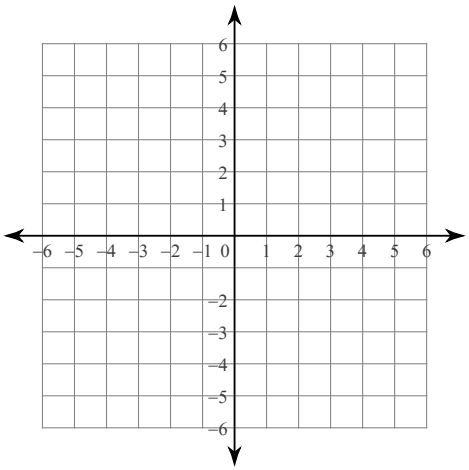
1760) $4 - 12 + 36 - 108...,\ n = 6$

Sketch the graph of each line.

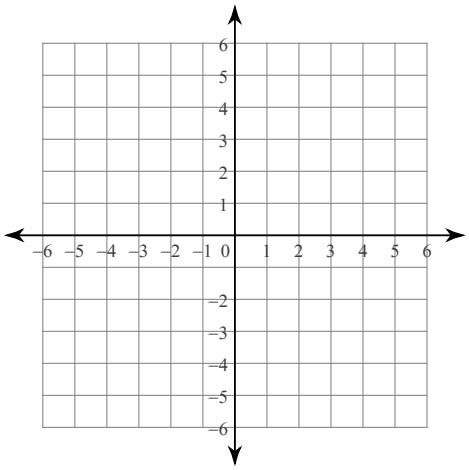
1761) $2x + y = 2$



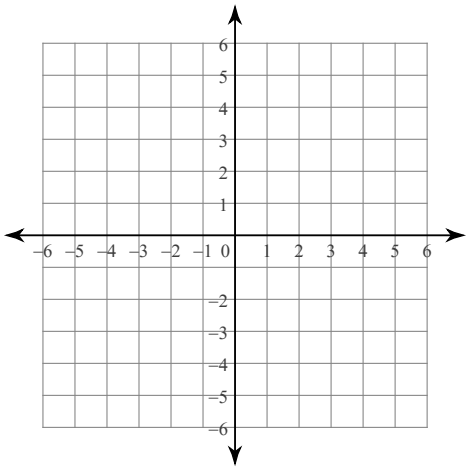
1762) $4x - 3y = -12$



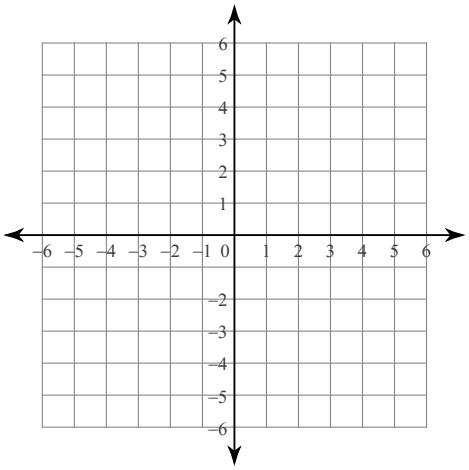
1763) $3x + 5y = 25$



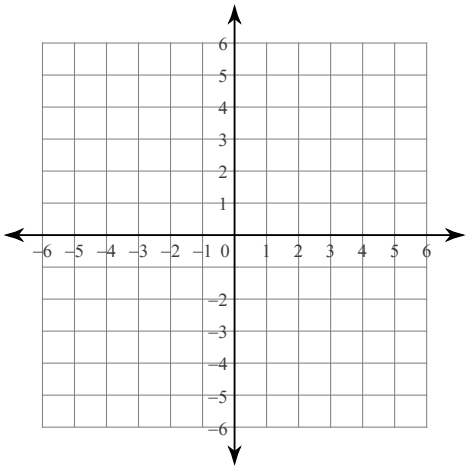
1764) $2x - y = 4$



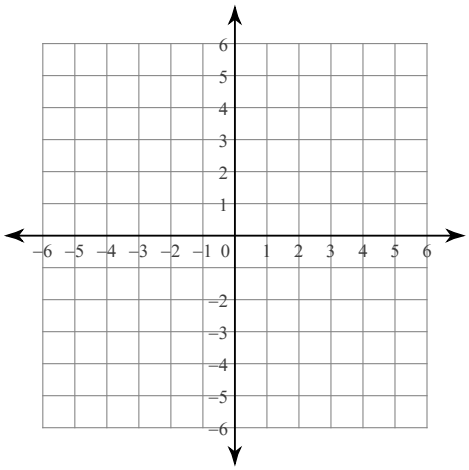
1765) $5x + 4y = -8$



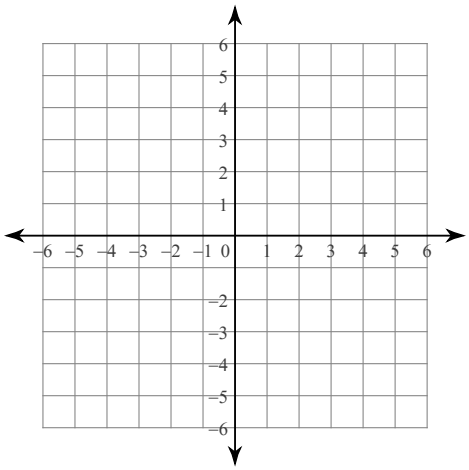
1766) $3x - y = -2$



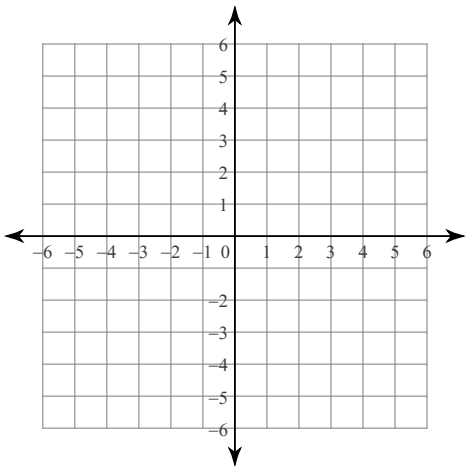
1767) $5x - 4y = 4$



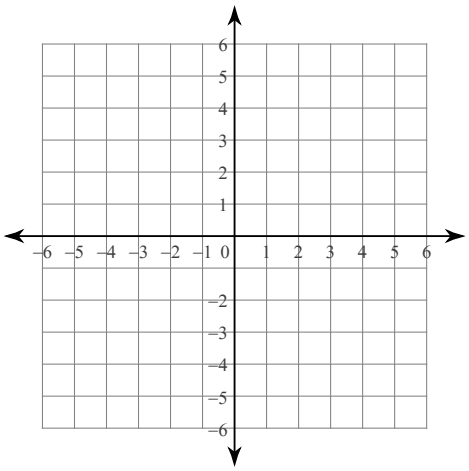
1768) $3x + y = 4$



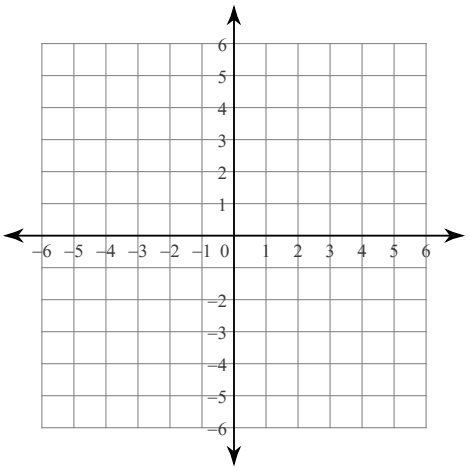
1769) $2x + 5y = 15$



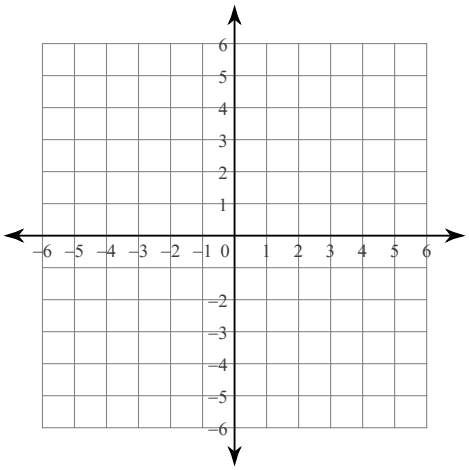
1770) $5x + y = -4$



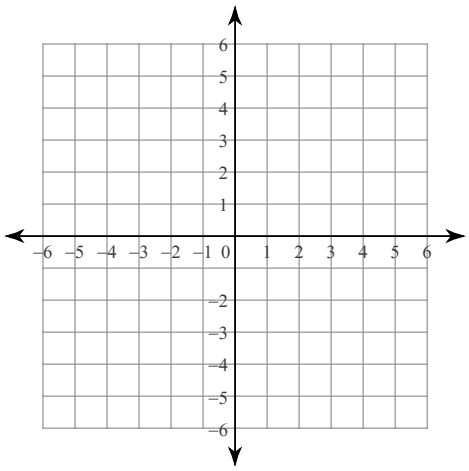
1771) $y = 4$



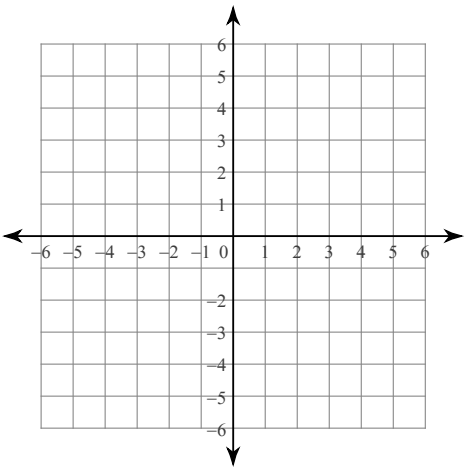
1772) $7x - y = -2$



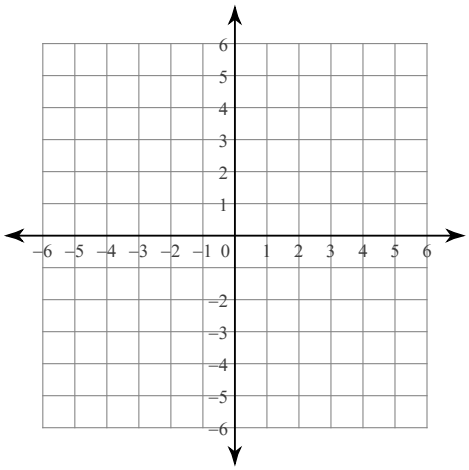
1773) $x = 2$



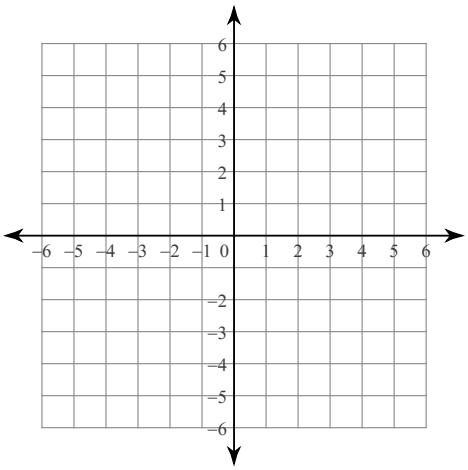
1774) $x = 0$



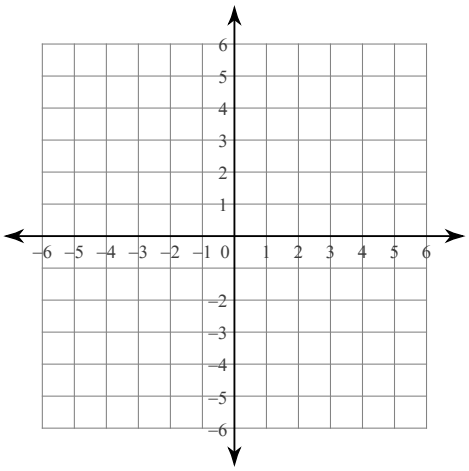
1775) $x - 5y = 10$



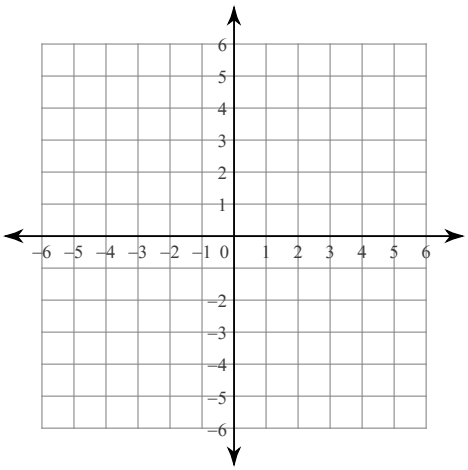
1776) $4x - 5y = 0$



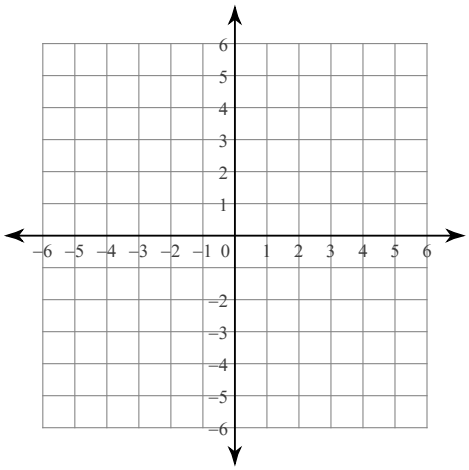
1777) $2x - 3y = -6$



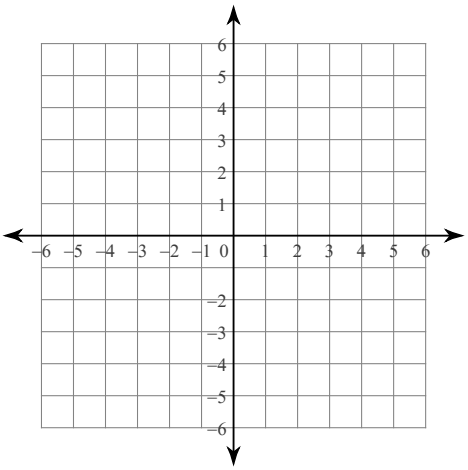
1778) $2x - y = 5$



1779) $3x + 4y = 12$

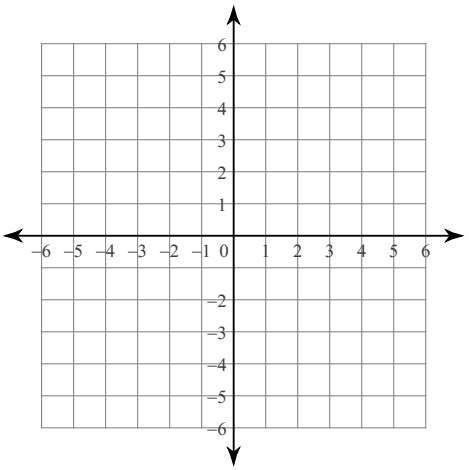


1780) $5x + 4y = -16$

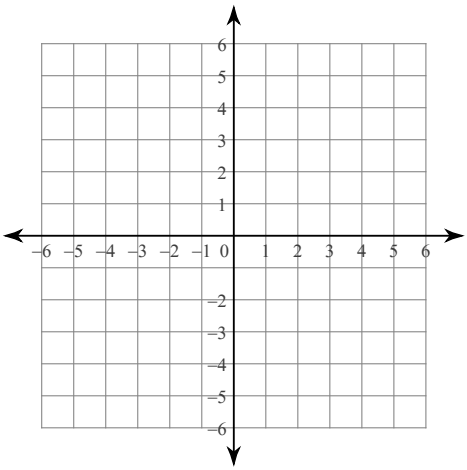


Sketch the graph of each linear inequality.

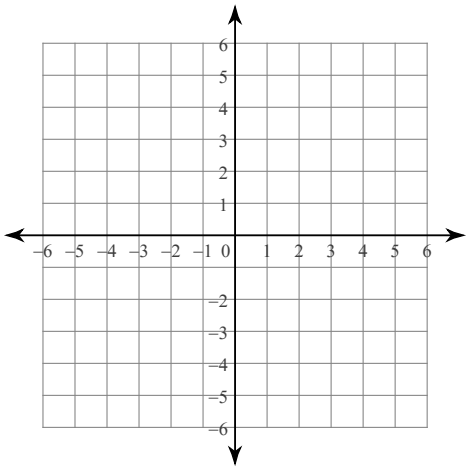
1781) $y \leq -3$



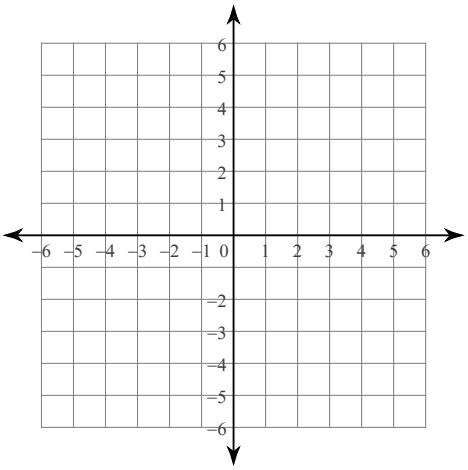
1782) $y \geq -1$



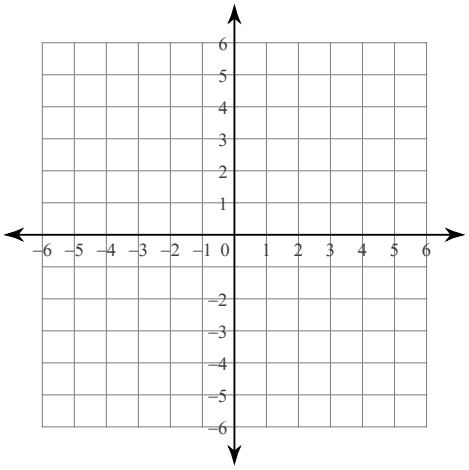
1783) $x < 2$



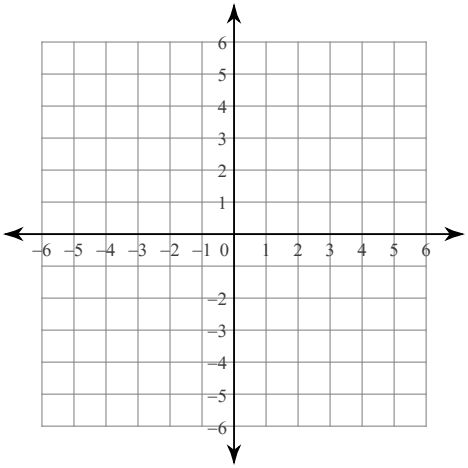
1784) $y \geq -2x + 4$



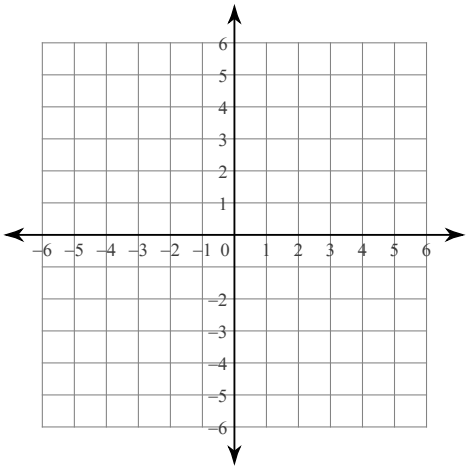
1785) $y < -\frac{4}{5}x + 2$



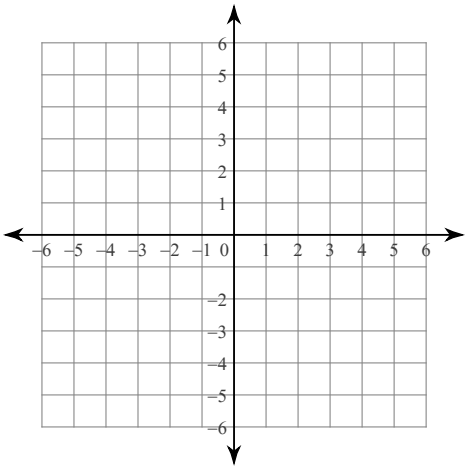
1786) $y > x - 3$



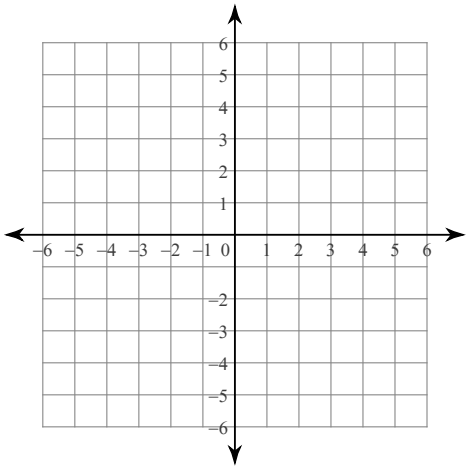
1787) $y > -\frac{5}{3}x - 5$



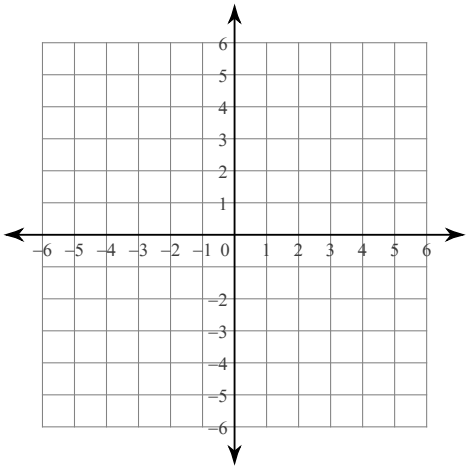
1788) $y \leq -\frac{1}{2}x$



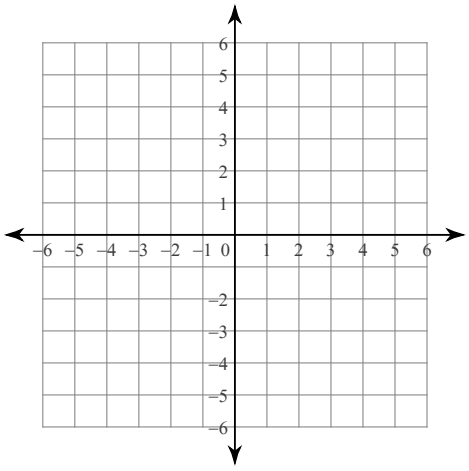
1789) $y > \frac{1}{3}x + 2$



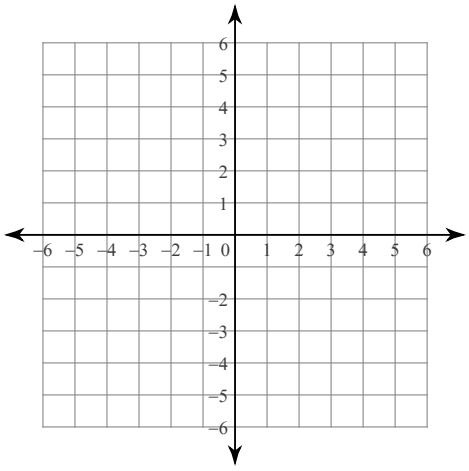
1790) $y > -\frac{2}{5}x - 2$



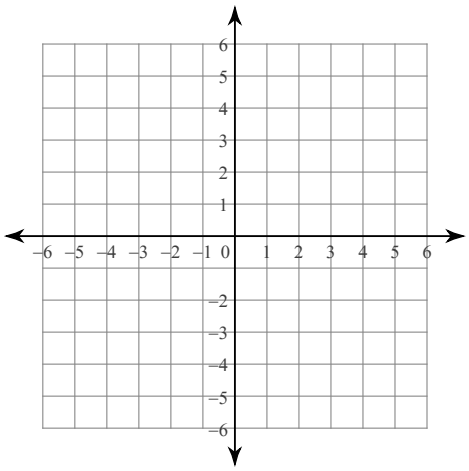
1791) $y > \frac{7}{4}x + 5$



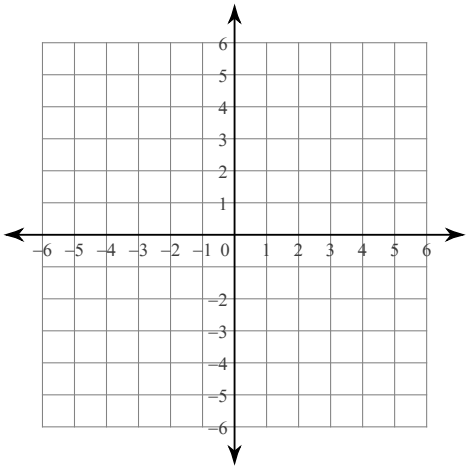
1792) $y \leq \frac{4}{3}x - 5$



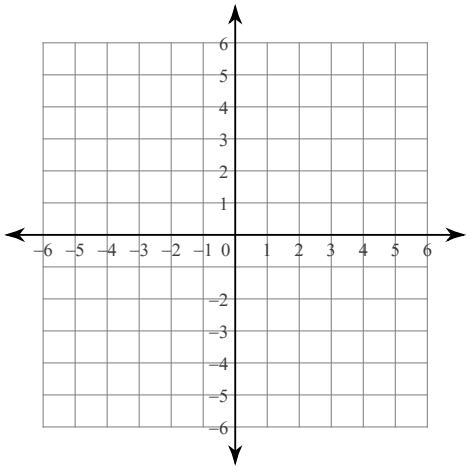
1793) $y > 2x - 4$



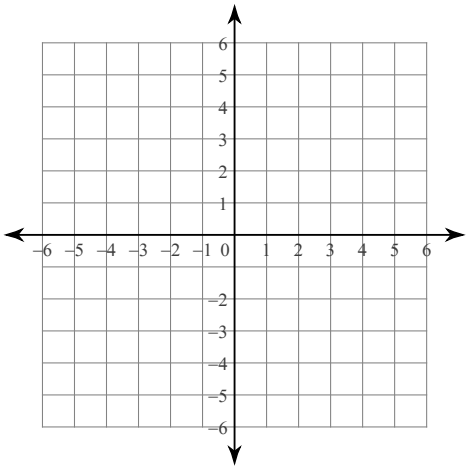
1794) $y < -\frac{1}{2}x - 1$



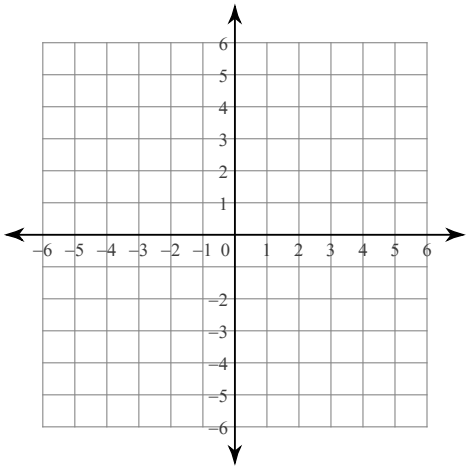
1795) $y \leq \frac{1}{2}x$



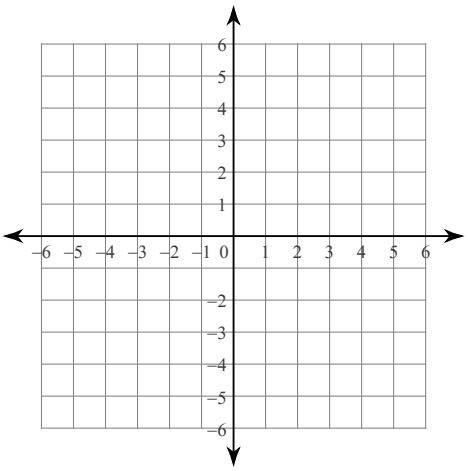
1796) $y < -\frac{5}{3}x + 2$



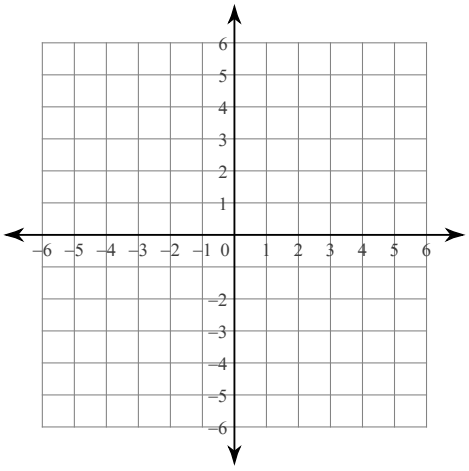
1797) $y > \frac{1}{5}x + 4$



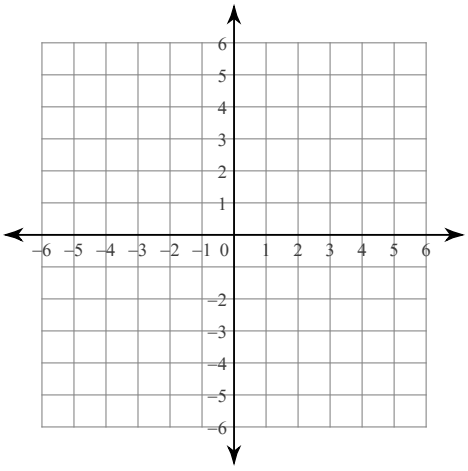
1798) $y > -x + 5$



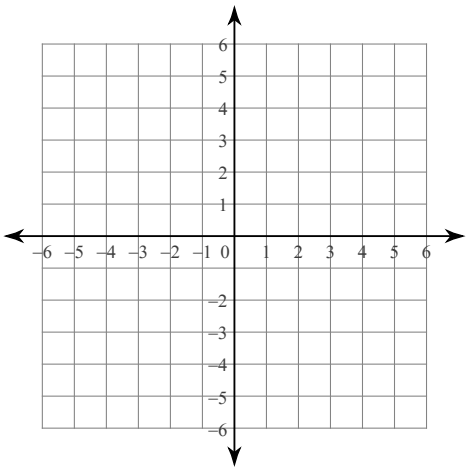
1799) $y \leq -\frac{9}{2}x - 4$



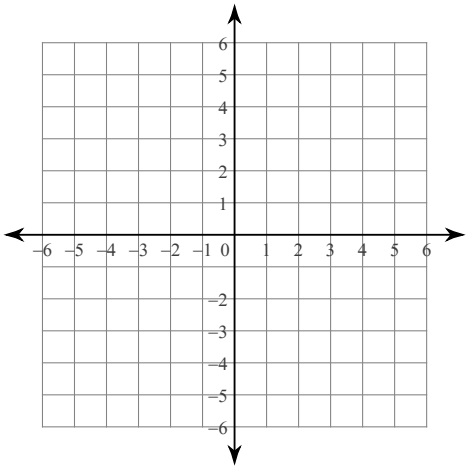
1800) $y > \frac{7}{5}x - 2$



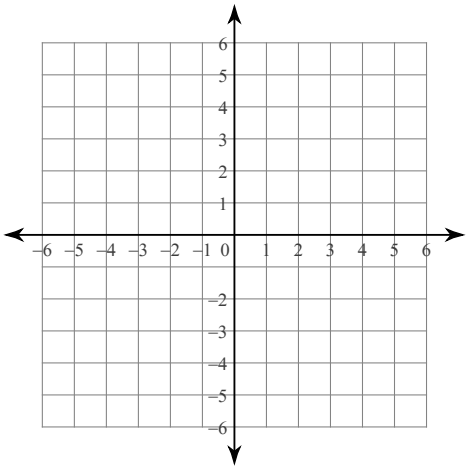
1801) $y \geq -2x + 1$



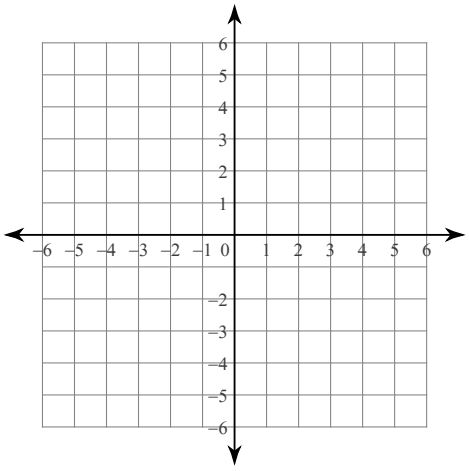
1802) $y > -\frac{1}{4}x + 2$



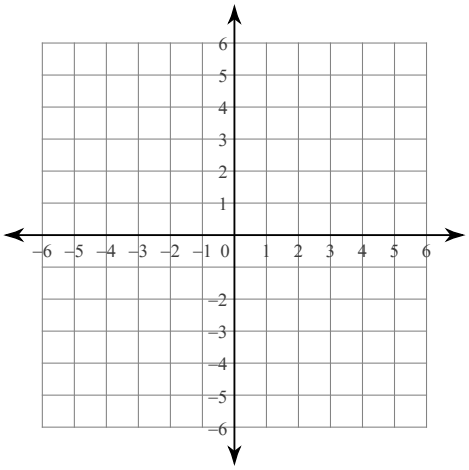
1803) $y \leq -\frac{1}{3}x + 5$



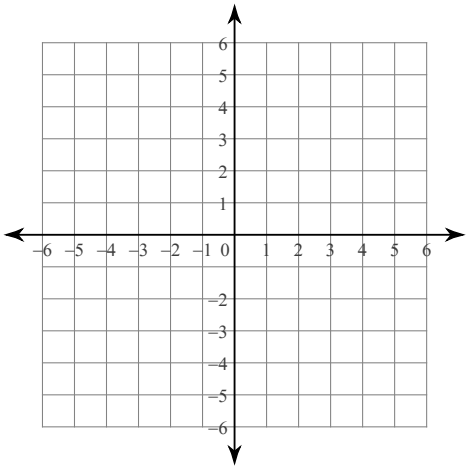
1804) $y \geq -\frac{9}{2}x - 5$



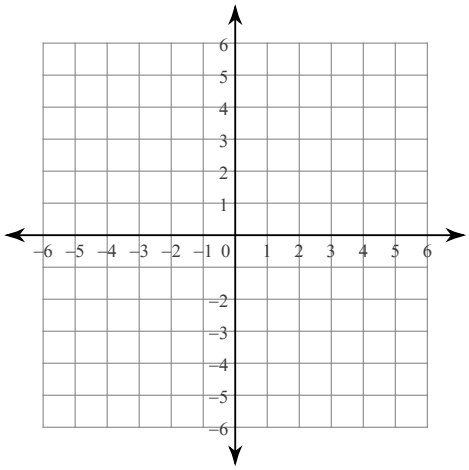
1805) $y < -2x - 1$



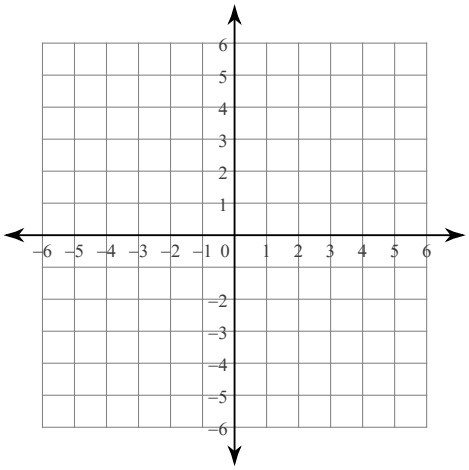
1806) $y > -\frac{2}{5}x - 3$



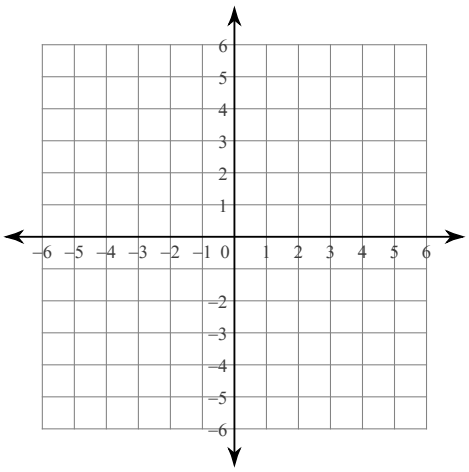
1807) $y \leq 2x$



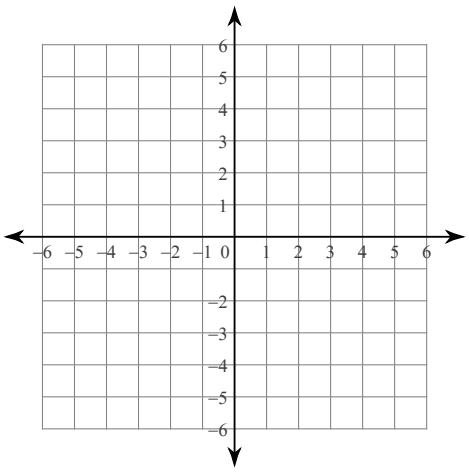
1808) $y < -7x + 4$



1809) $y \le -\frac{3}{2}x + 2$

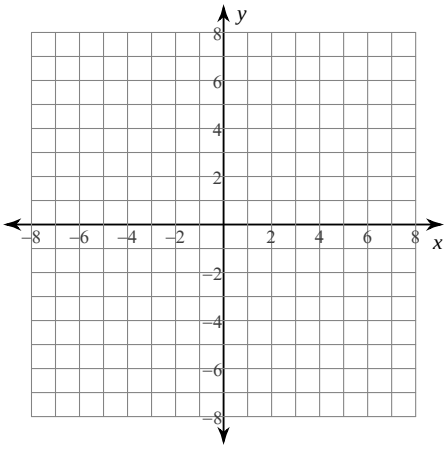


1810) $y \ge -\frac{2}{3}x - 5$

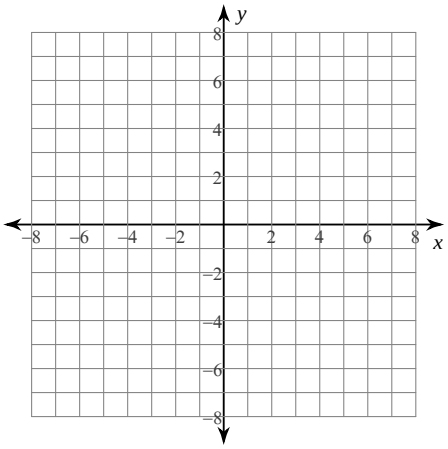


Identify the domain and range of each. Then sketch the graph.

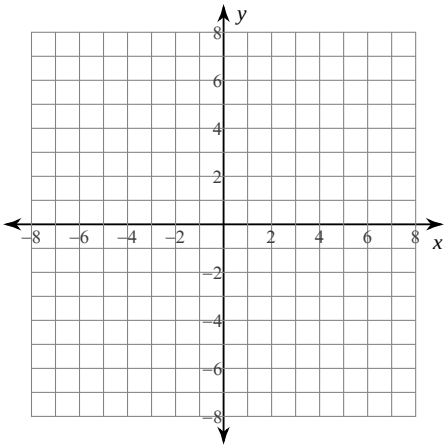
1811) $y = \log_4 (x + 6) - 2$



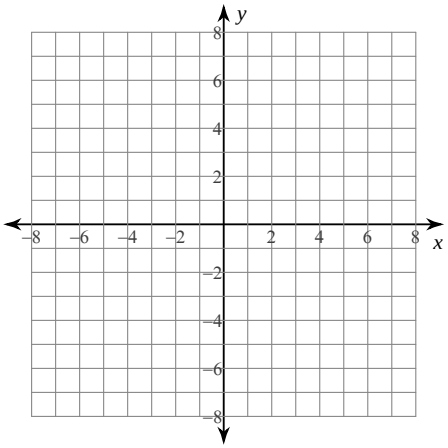
1812) $y = \log_5 (x - 1) - 3$



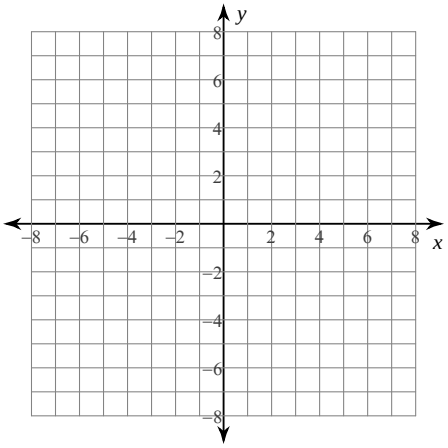
1813) $y = \log_3 (x + 3) - 2$



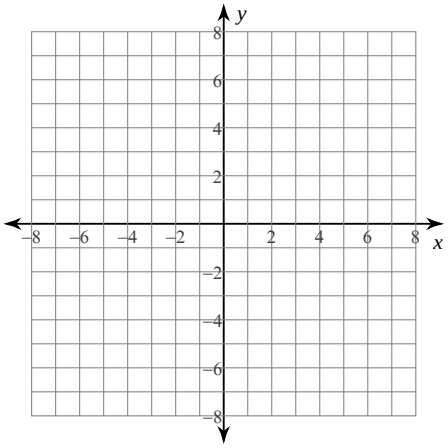
1814) $y = \log_3 (x + 6) - 2$



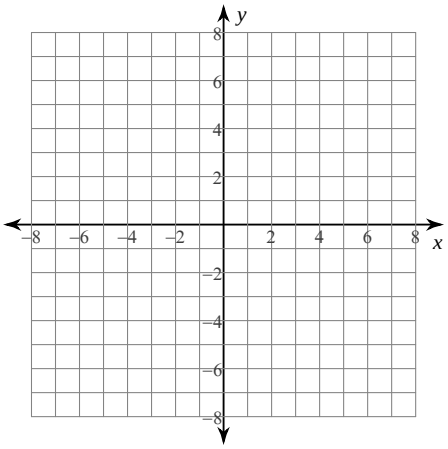
1815) $y = \log_4 (x - 1) - 3$



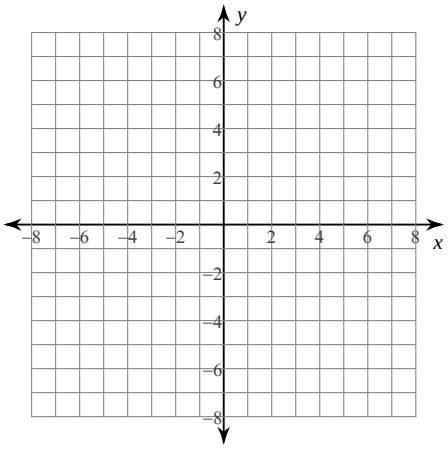
1816) $y = \log_4 (x - 1) - 4$



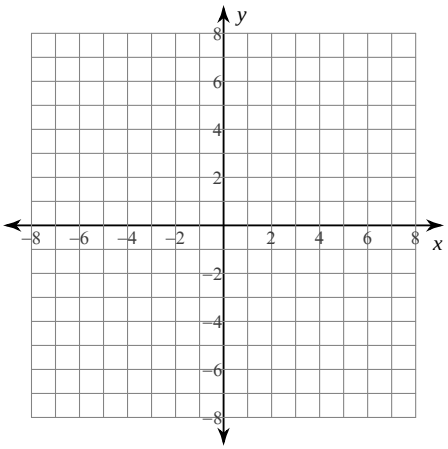
1817) $y = \log_2 (x - 1) - 4$



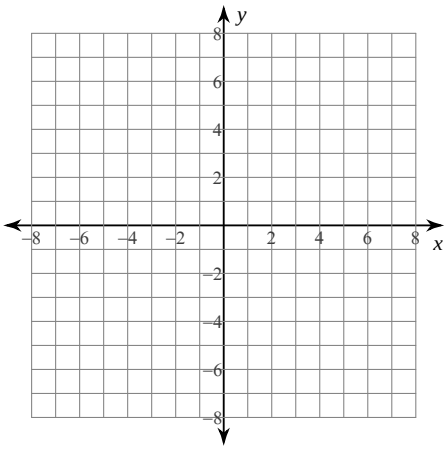
1818) $y = \log_3 (x - 3) - 4$



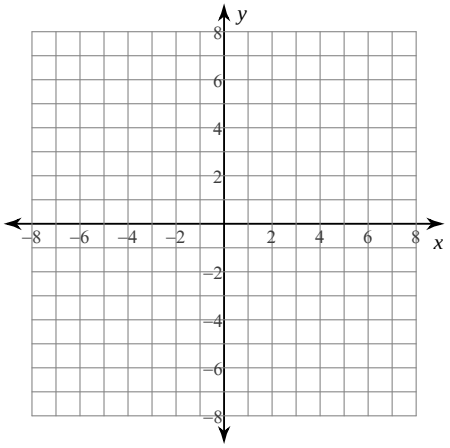
1819) $y = \log_3 (x + 1) - 5$



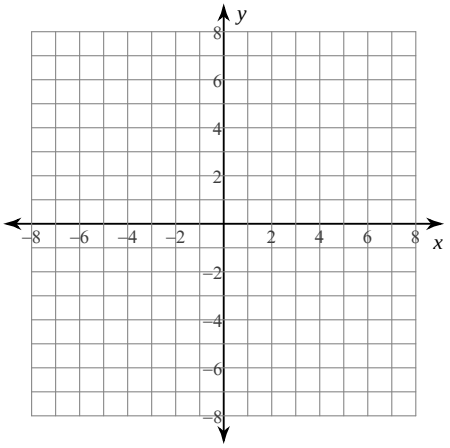
1820) $y = \log_3 (x - 1) - 4$



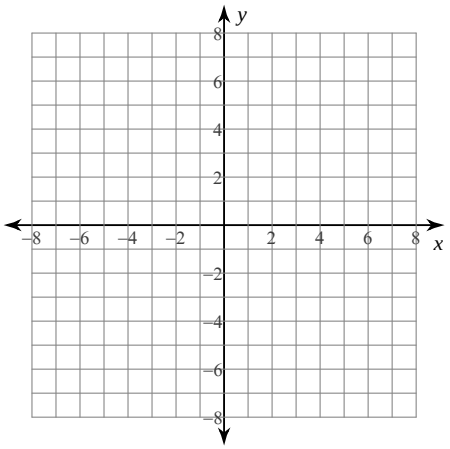
1821) $y = \log_4 (x - 1)$



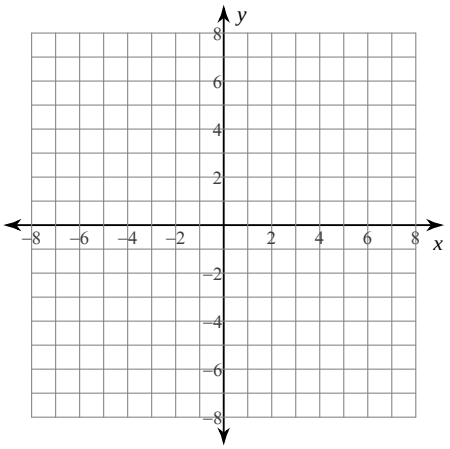
1822) $y = \log_5 (x - 1) - 3$



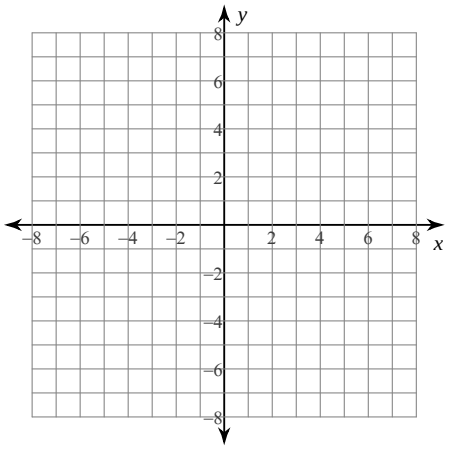
1823) $y = \log_{\frac{1}{3}} (x - 1)$



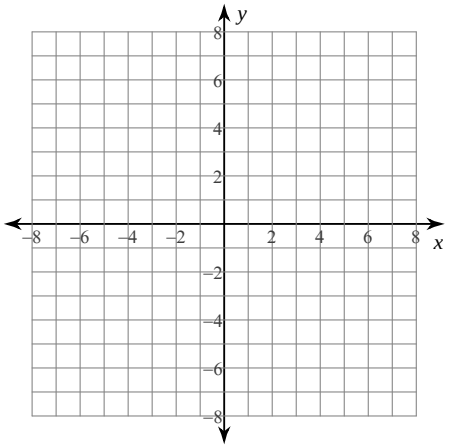
1824) $y = \log_{\frac{1}{3}} (x + 2) - 5$



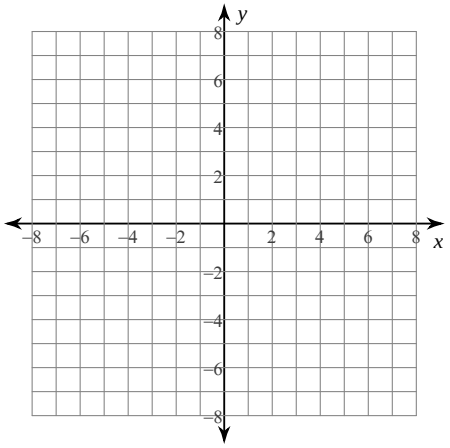
1825) $y = \ln (x - 1) - 5$



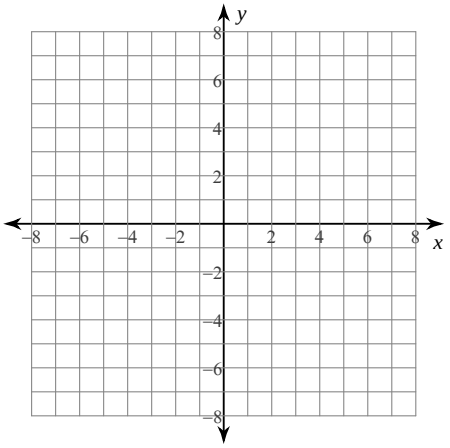
1826) $y = \log_3 (x - 1)$



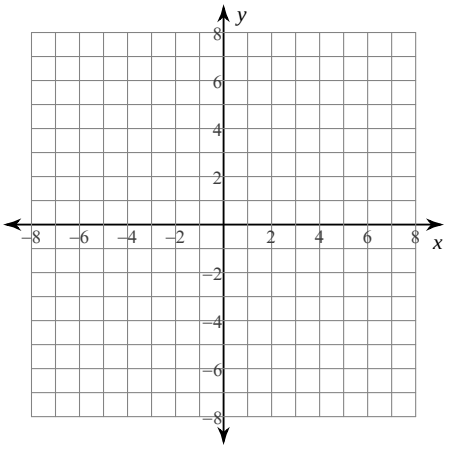
1827) $y = \ln(x - 1) - 4$



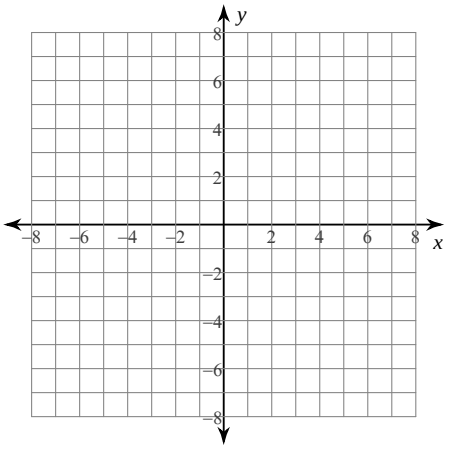
1828) $y = \log_2(x + 3) + 4$



1829) $y = \log_2(x - 3) + 4$

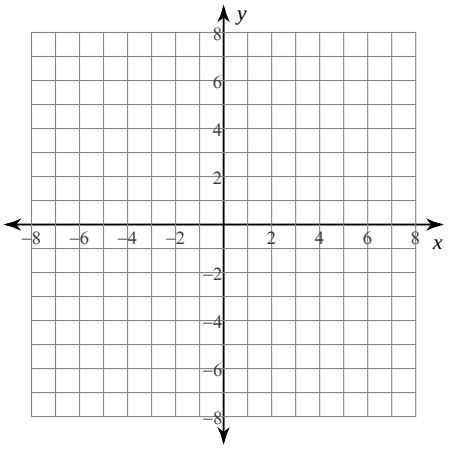


1830) $y = \log_2(x - 1) + 3$

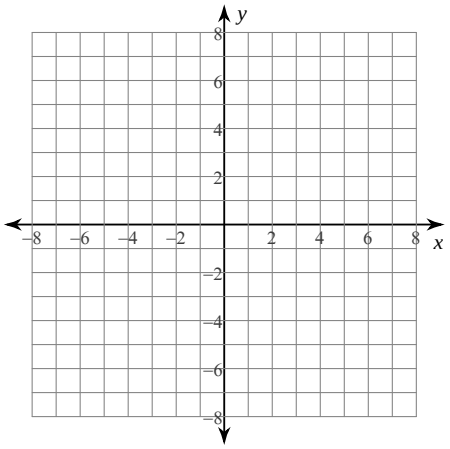


Graph each function.

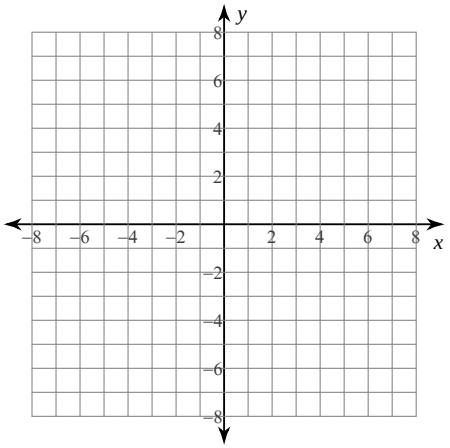
1831) $f(x) = -\dfrac{3x}{x^2 + x - 6}$



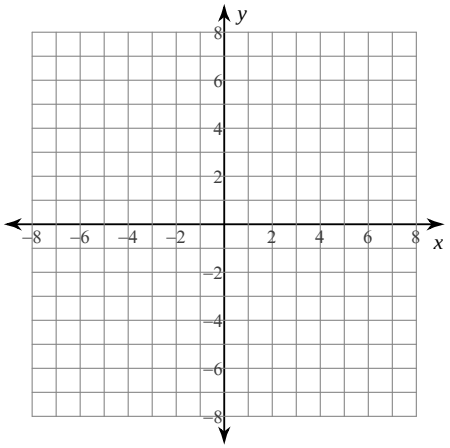
1832) $f(x) = \dfrac{x^2 - 3x}{-2x^2 + 4x + 6}$



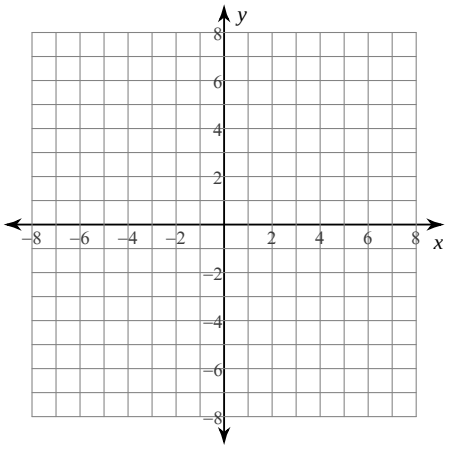
1833) $f(x) = \dfrac{2x^2 + 8x}{x^2 - 2x}$



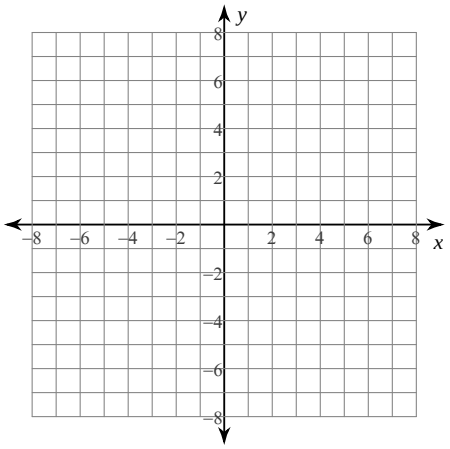
1834) $f(x) = \dfrac{1}{x^2 - 2x - 3}$



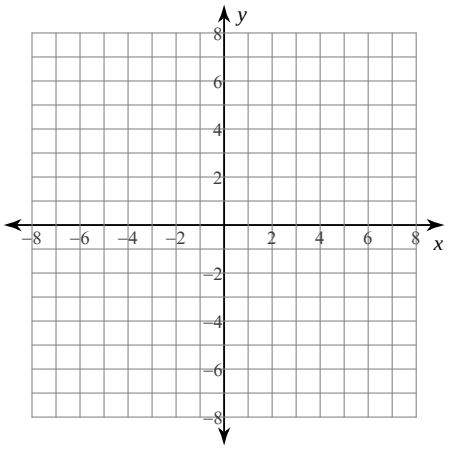
1835) $f(x) = \dfrac{x + 2}{-4x - 16}$



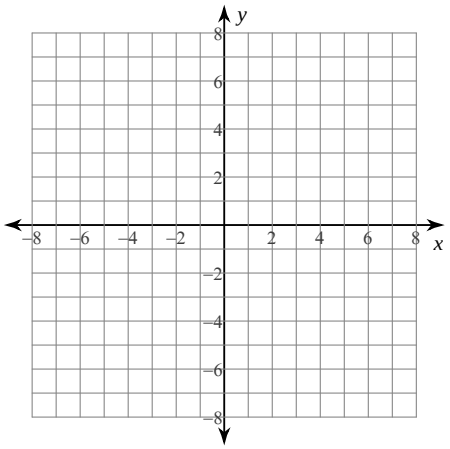
1836) $f(x) = \dfrac{x^2 - x - 2}{2x^2 - 4x - 6}$



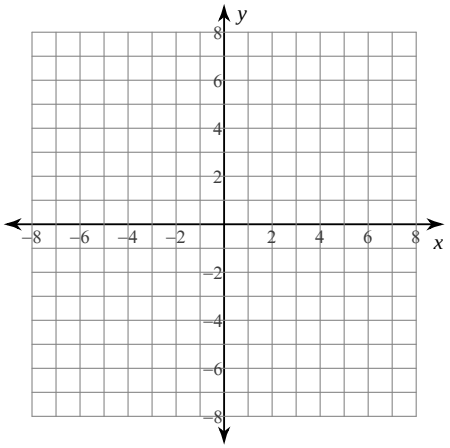
1837) $f(x) = \dfrac{4}{x - 1}$



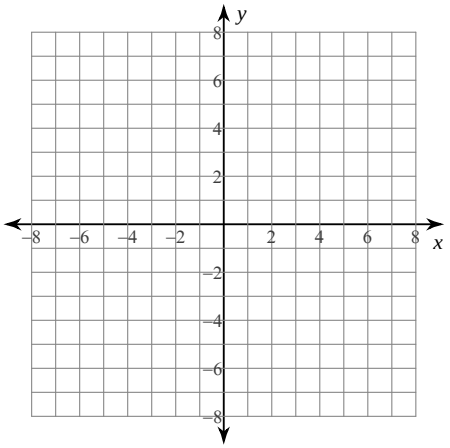
1838) $f(x) = \dfrac{x^2 + 7x + 12}{4x^2 + 4x - 48}$



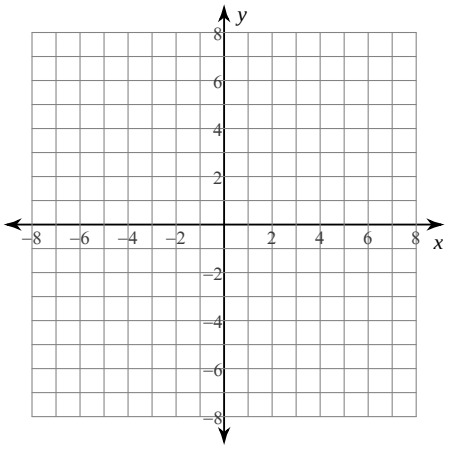
1839) $f(x) = \dfrac{x+2}{-x+2}$



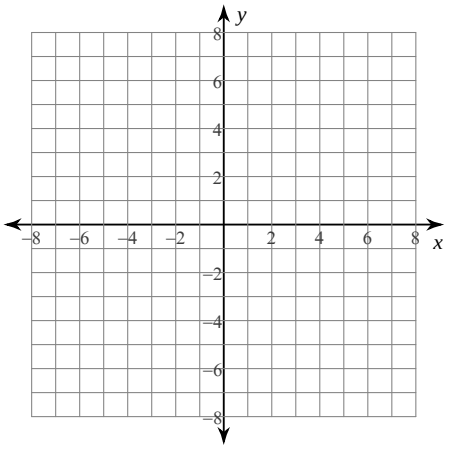
1840) $f(x) = -\dfrac{1}{x^2+x-6}$



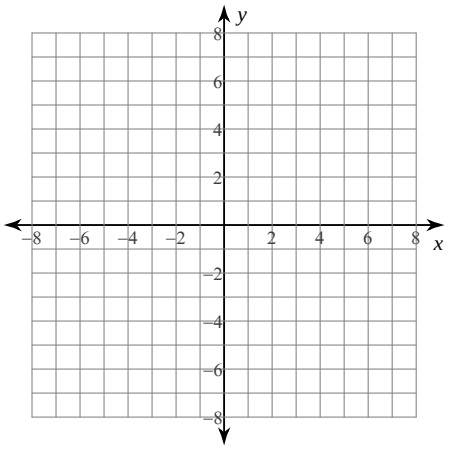
1841) $f(x) = \dfrac{3x+3}{x}$



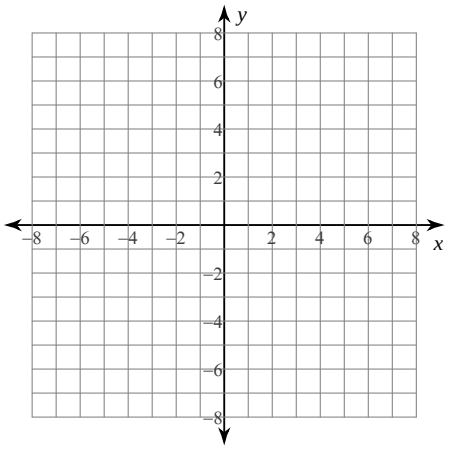
1842) $f(x) = -\dfrac{4}{x^2-3x}$



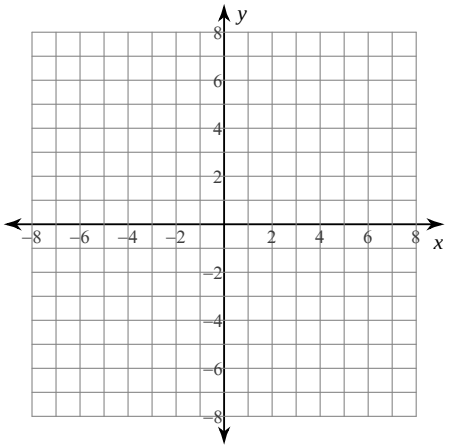
1843) $f(x) = \dfrac{x}{x^3-x^2-2x}$



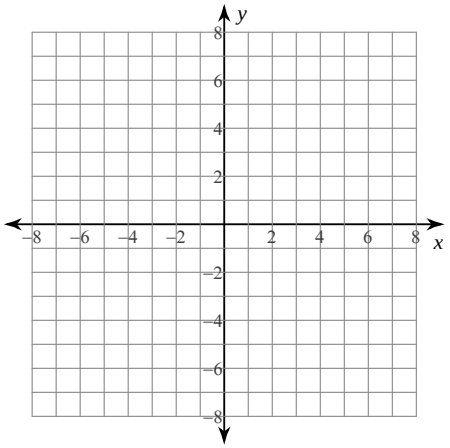
1844) $f(x) = \dfrac{x^2+2x-3}{-4x^2+16x-12}$



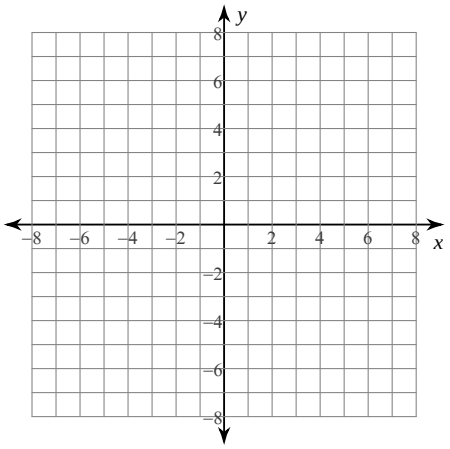
1845) $f(x) = \dfrac{1}{-2x^2 - 2x + 4}$



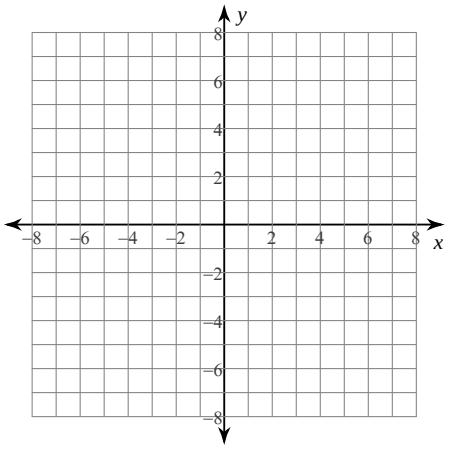
1846) $f(x) = \dfrac{-2x^2 + 2x}{x^2 - 2x - 3}$



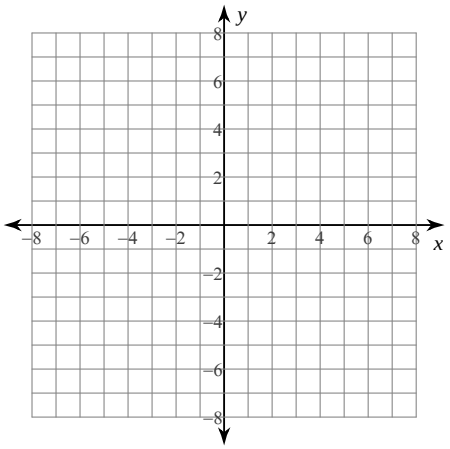
1847) $f(x) = \dfrac{1}{4x + 8}$



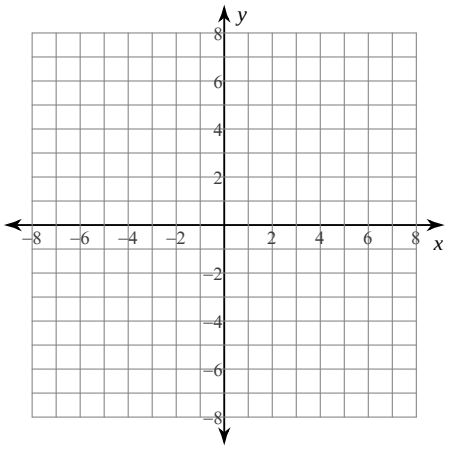
1848) $f(x) = \dfrac{x}{x + 1}$



1849) $f(x) = \dfrac{x^2 - 7x + 12}{4x^2 - 36}$



1850) $f(x) = \dfrac{x - 2}{-x^2 + 2x + 3}$



Solve each system by graphing.

1851) $y = -x + 4$

$y = \dfrac{1}{2}x + 1$

1852) $y = -2x + 4$

$y = -\dfrac{1}{4}x - 3$

1853) $y = x - 1$
$y = 4x + 2$

1854) $y = 7x - 4$
$y = x + 2$

1855) $y = -\frac{1}{3}x - 2$
$y = -\frac{7}{3}x + 4$

1856) $y = x - 1$
$y = -2x - 4$

1857) $y = -\frac{1}{2}x + 3$
$y = -3x - 2$

1858) $y = -3x + 4$
$y = -\frac{1}{2}x - 1$

1859) $y = -\frac{4}{3}x - 3$
$y = -\frac{4}{3}x + 4$

1860) $y = -x + 3$
$y = -x - 1$

1861) $y = -\frac{1}{2}x + 2$
$y = 2x - 3$

1862) $y = -x - 3$
$y = 6x + 4$

1863) $y = -\frac{2}{3}x + 2$
$y = -\frac{8}{3}x - 4$

1864) $y = 6x + 4$
$y = -x - 3$

1865) $x = 2$
$y = \frac{1}{2}x + 1$

1866) $y = \frac{1}{2}x - 2$
$y = \frac{7}{4}x + 3$

1867) $y = -\frac{3}{2}x - 4$
$y = \frac{5}{2}x + 4$

1868) $y = -x + 4$
$x = 1$

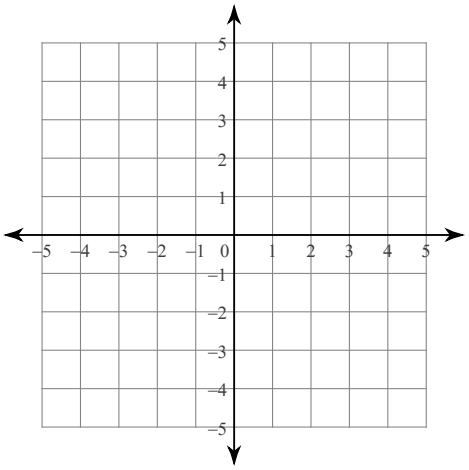
1869) $y = -\frac{7}{4}x + 4$
$y = -\frac{7}{4}x + 1$

1870) $y = -\frac{2}{3}x - 4$
$y = x + 1$

Sketch the solution to each system of inequalities.

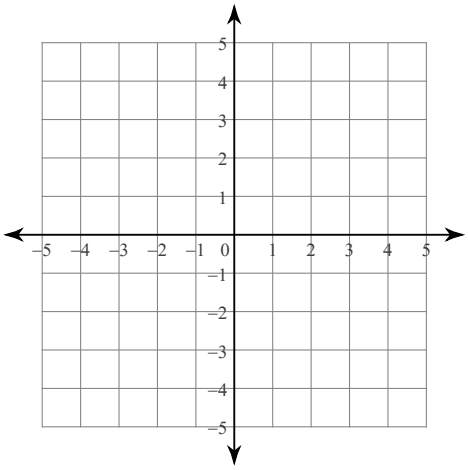
1871) $y \leq -\frac{5}{3}x - 2$

$y \leq -\frac{1}{3}x + 2$



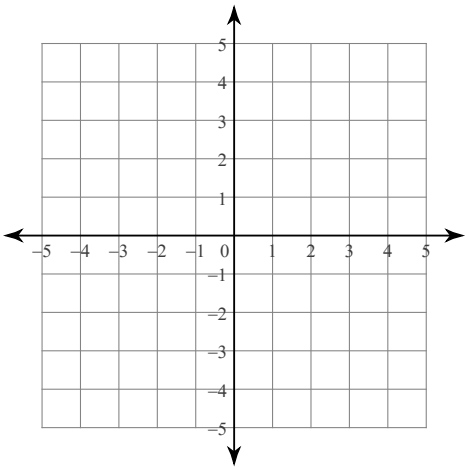
1872) $y \leq -2x - 3$

$y \leq 3x + 2$



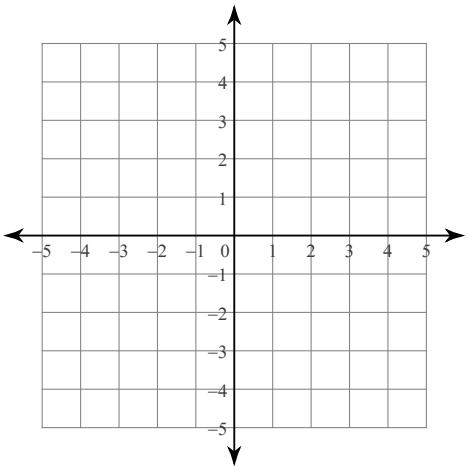
1873) $y > -2x - 3$

$y \geq 4x + 3$



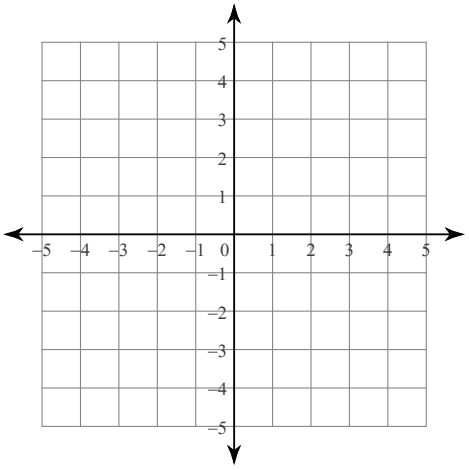
1874) $y < x + 1$

$y < 4x - 2$



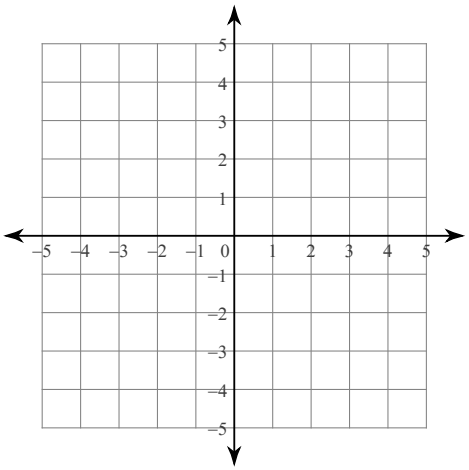
1875) $y \le \frac{3}{2}x - 1$

$y < \frac{1}{2}x + 1$



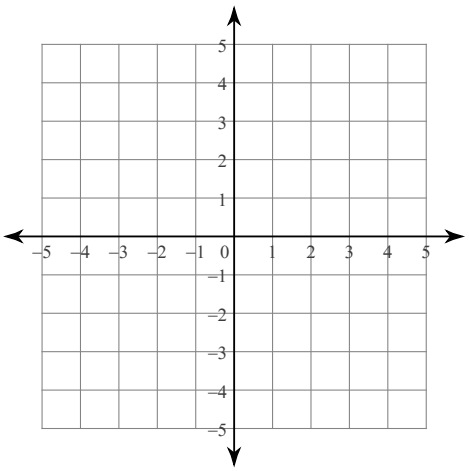
1876) $y < \frac{5}{2}x + 3$

$y > -2$



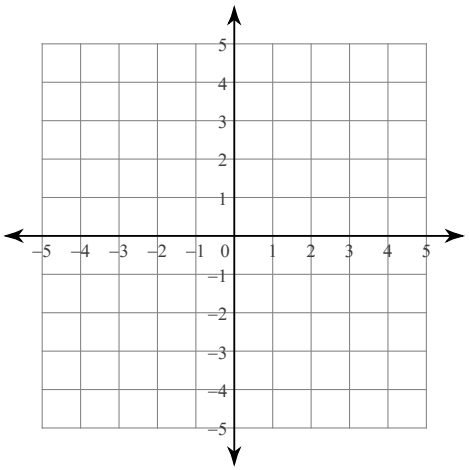
1877) $y < -x + 1$

$y \le \frac{1}{3}x - 3$

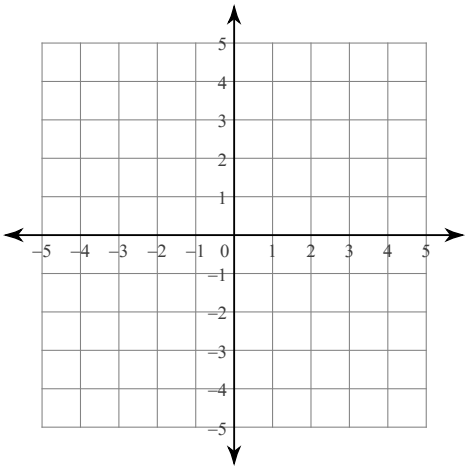


1878) $y \ge 4x - 3$

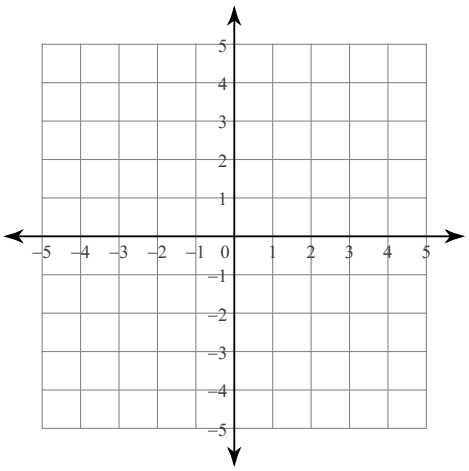
$y > -x + 2$



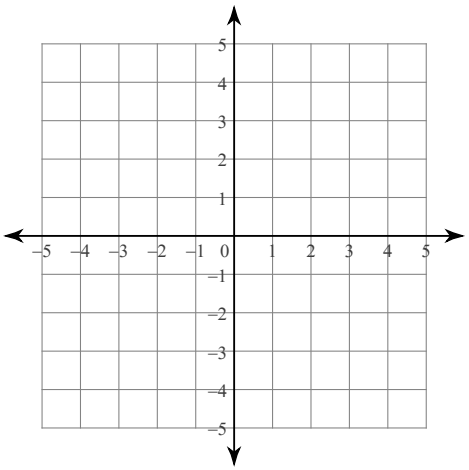
1879) $y < -2x + 3$
$y > 3x - 2$



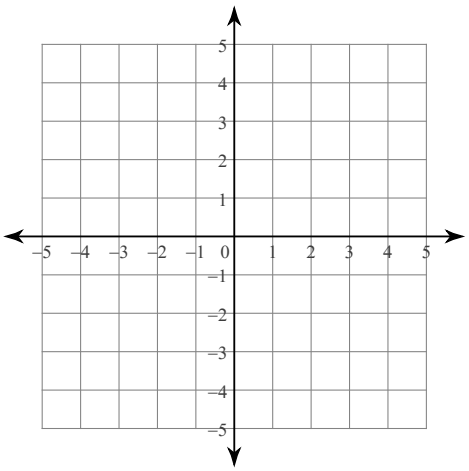
1880) $y \geq -\frac{5}{3}x + 2$
$y < -\frac{5}{3}x - 1$



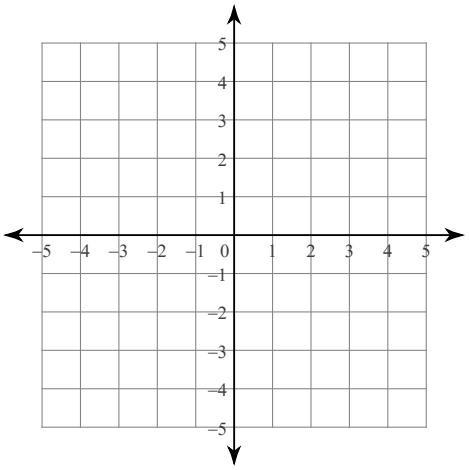
1881) $y < 4x + 2$
$y \geq -x - 3$



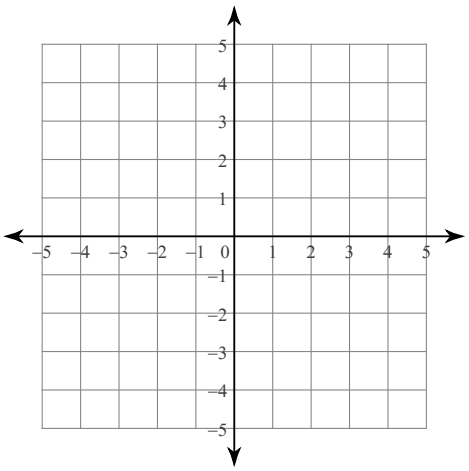
1882) $y > -x - 1$
$y < \frac{1}{3}x + 3$



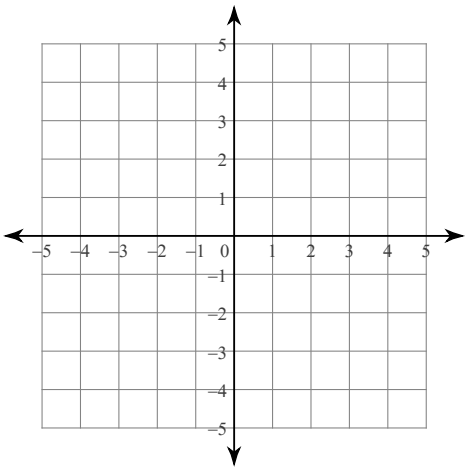
1883) $y < 2x - 2$
$y > 2x + 1$



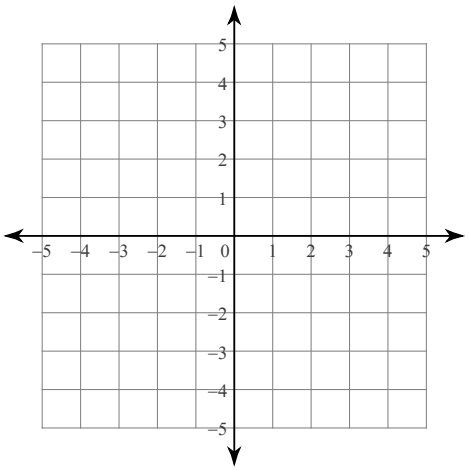
1884) $y > \frac{3}{2}x - 2$
$y \geq -\frac{1}{2}x + 2$



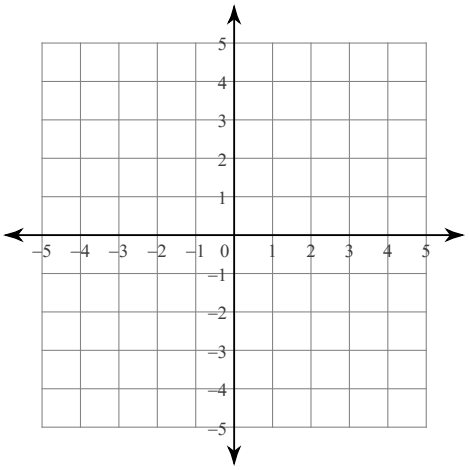
1885) $y < -x - 3$
$y > x - 1$



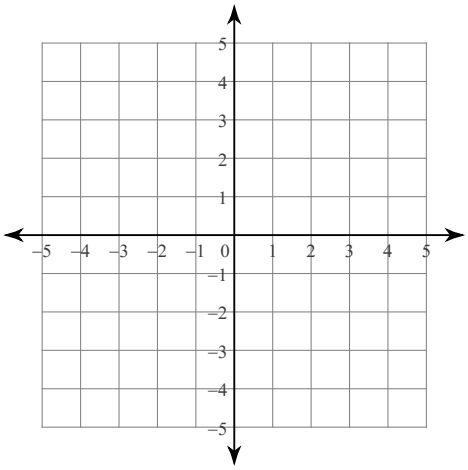
1886) $y \geq -3$
$y \leq 2x + 1$



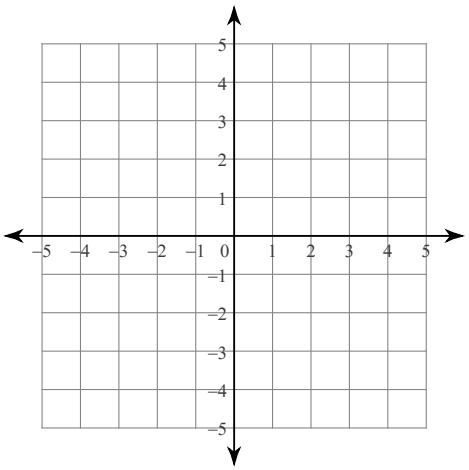
1887) $y > -2x + 3$
$y \leq 3x - 2$



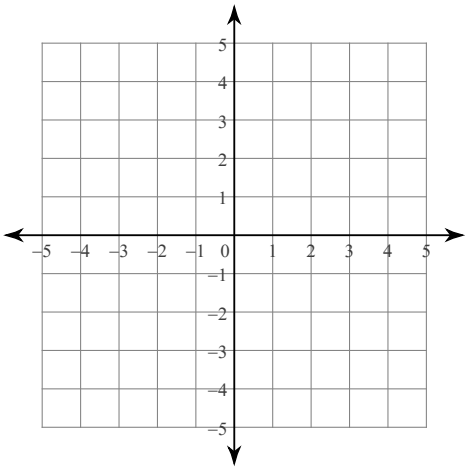
1888) $y \leq -2x - 3$
$y < -2x - 1$



1889) $y > \frac{4}{3}x + 1$
$y < \frac{1}{3}x - 2$

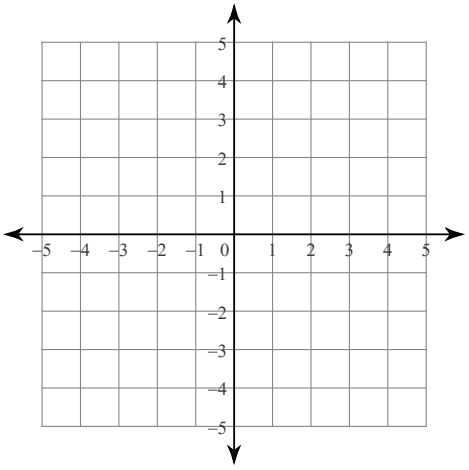


1890) $y < \frac{2}{3}x + 1$
$y < 2x - 3$



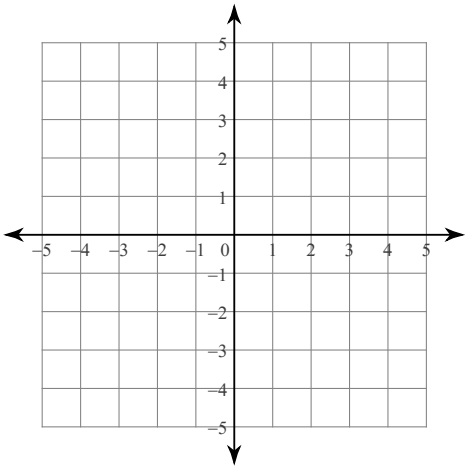
1891) $y \geq \frac{1}{3}x - 3$

$y \leq \frac{1}{3}x + 2$



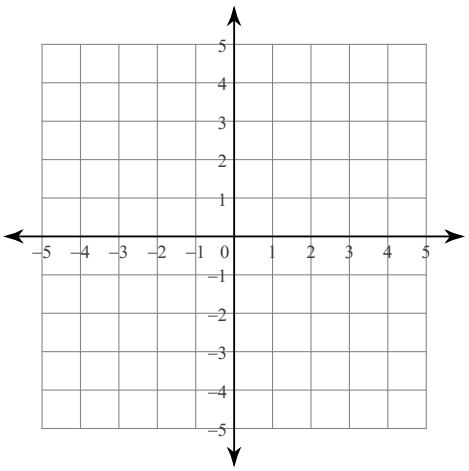
1892) $y < \frac{1}{2}x + 3$

$y < -2x - 2$



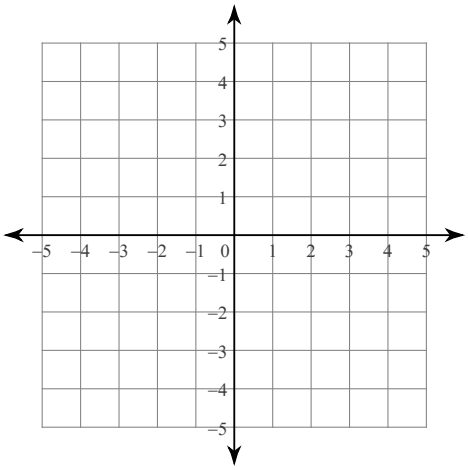
1893) $y < -2x + 2$

$y < -\frac{1}{2}x - 1$



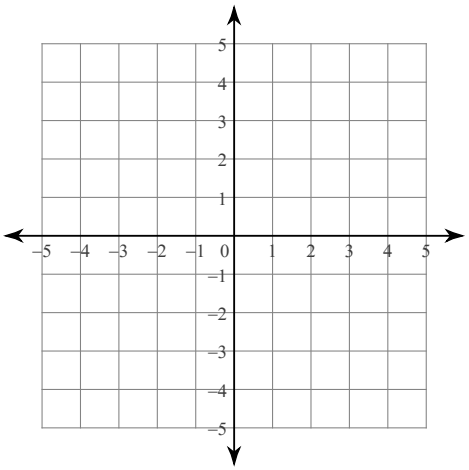
1894) $y > \frac{1}{3}x + 2$

$y > \frac{1}{3}x - 2$



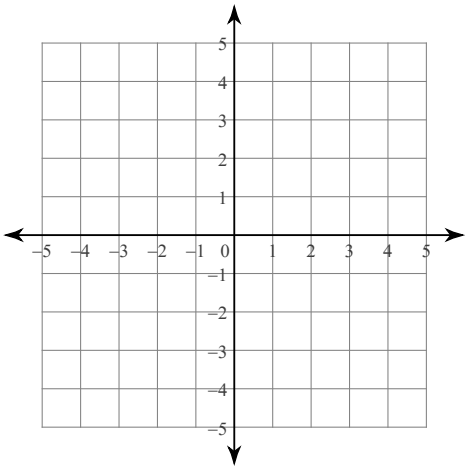
1895) $y \geq 1$

$y > \frac{4}{3}x - 3$



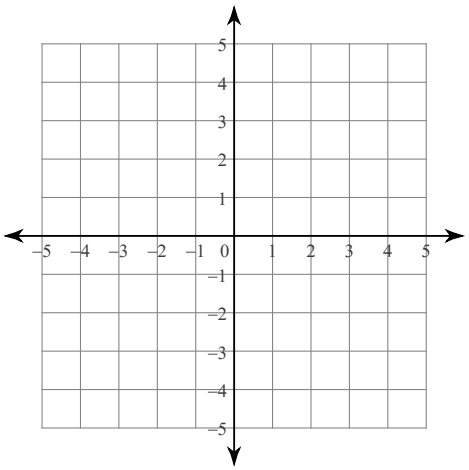
1896) $y > -3$

$y \leq x - 2$



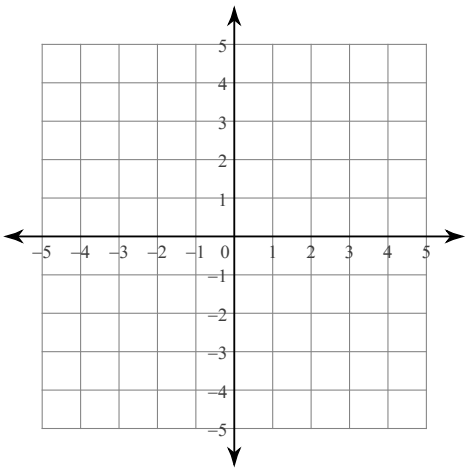
1897) $y \leq \frac{1}{2}x - 2$

$y \geq 3x + 3$

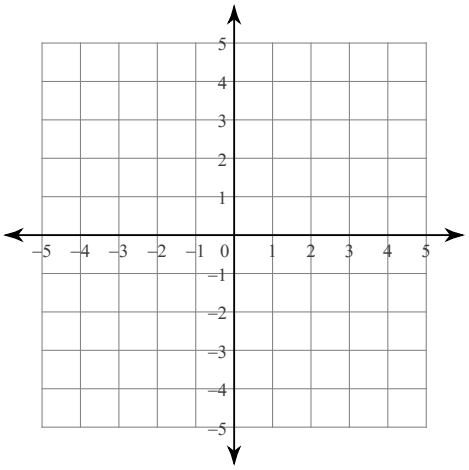


1898) $y \leq \frac{1}{2}x + 1$

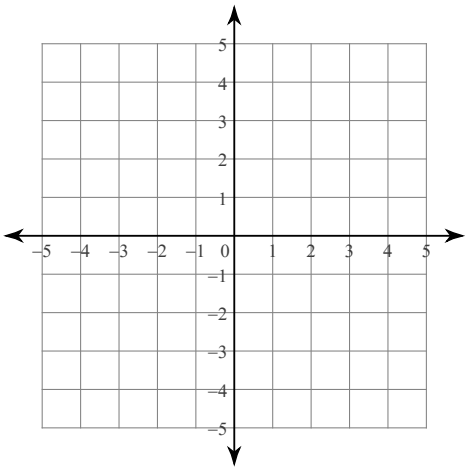
$y \leq \frac{5}{2}x - 3$



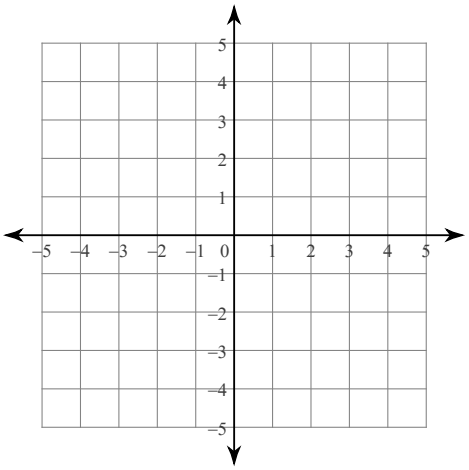
1899) $y > -2x + 3$
$y < -2x - 3$



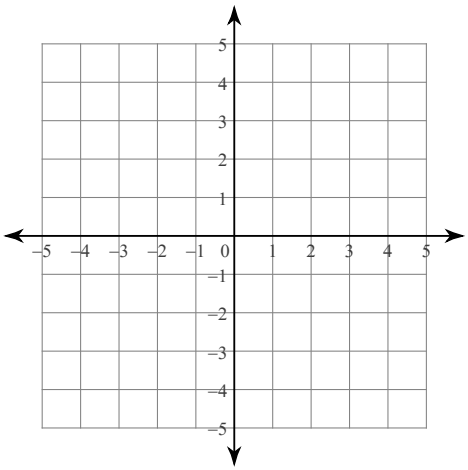
1900) $y \leq -3x - 3$
$y \leq -\frac{1}{2}x + 2$



1901) $y > -4x - 1$
$y \leq -4x + 2$

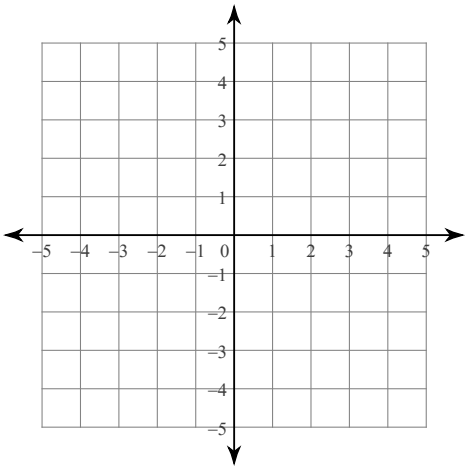


1902) $y \geq -1$
$y \geq -\frac{3}{2}x + 2$



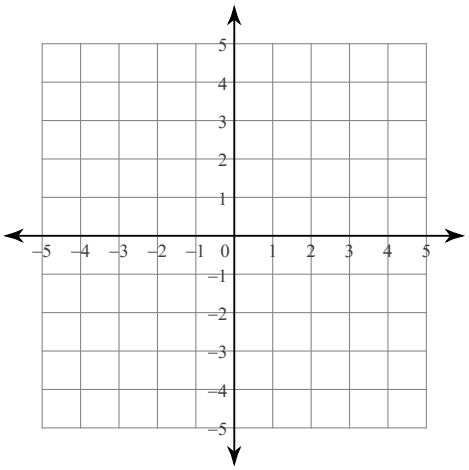
1903) $y < x - 3$

$y \geq -3x + 1$



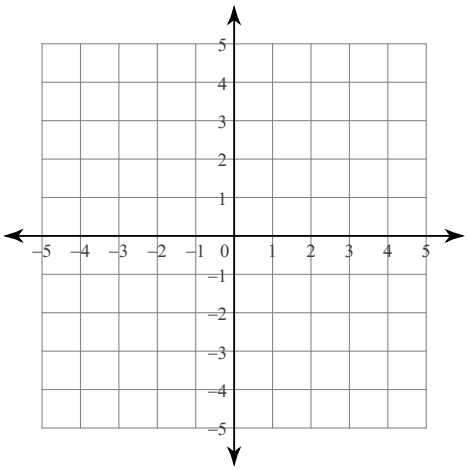
1904) $y < \frac{1}{2}x + 3$

$y \geq -2x - 2$



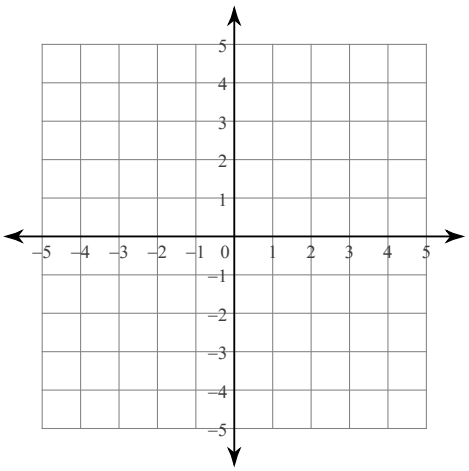
1905) $y \leq -2x - 2$

$y \geq -\frac{1}{2}x + 1$



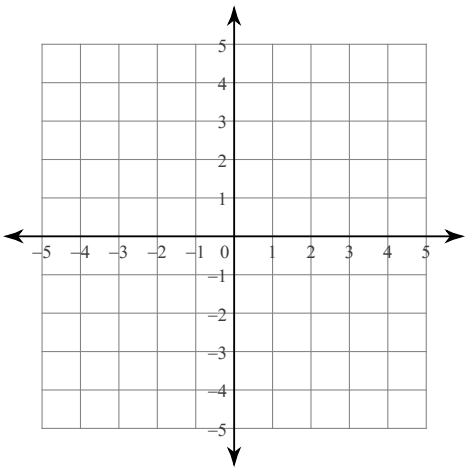
1906) $y \geq -\frac{4}{3}x - 3$

$y > \frac{2}{3}x + 3$



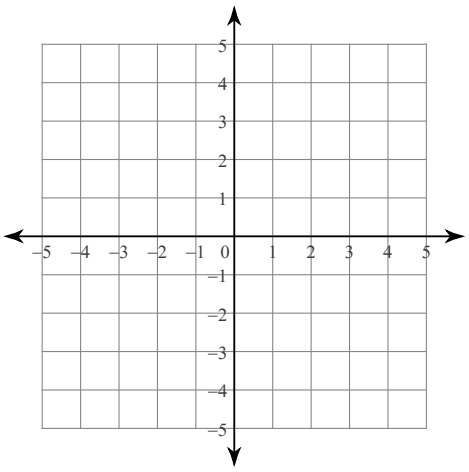
1907) $y \le \frac{3}{2}x + 1$

$y < \frac{1}{2}x - 1$



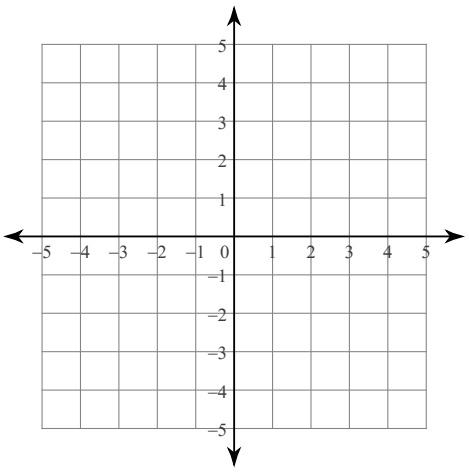
1908) $y \ge \frac{1}{3}x - 2$

$y > \frac{4}{3}x + 1$



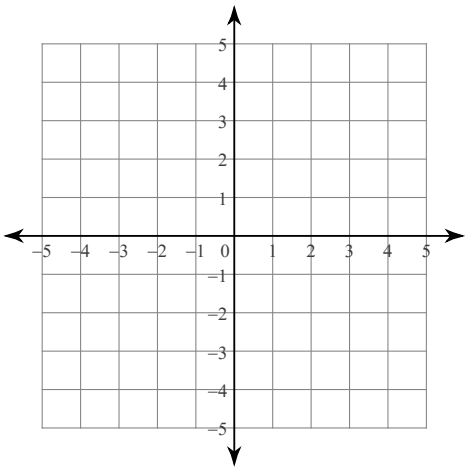
1909) $y \ge -\frac{1}{2}x + 2$

$y \ge x - 1$



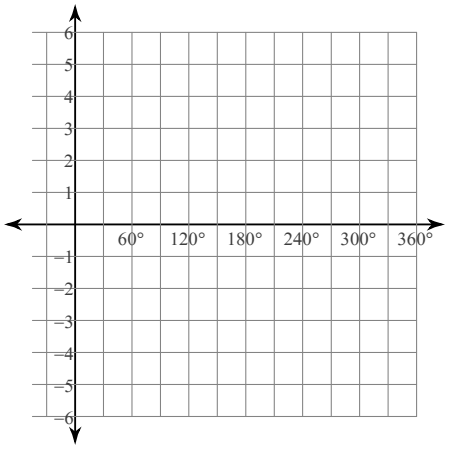
1910) $y < x - 2$

$y \le 4x + 1$

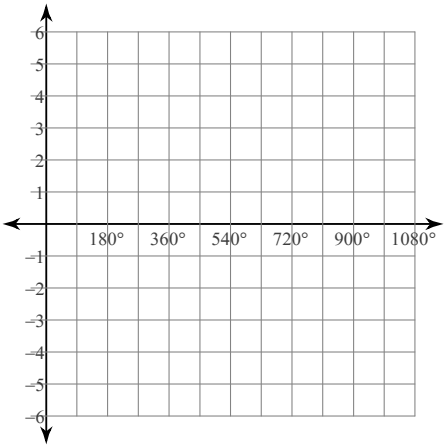


Graph each function using degrees.

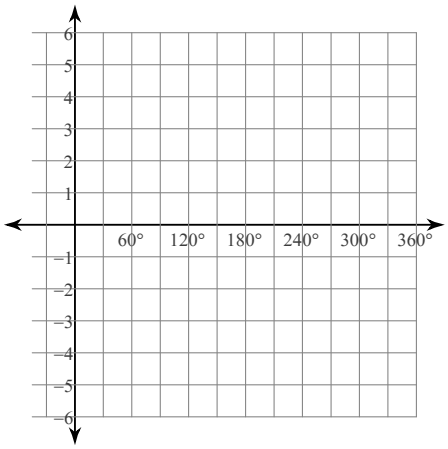
1911) $y = 3\cos\left(4\theta + 120\right)$



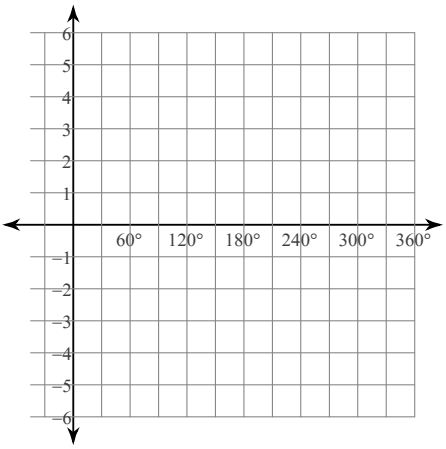
1912) $y = 4\cos\left(\frac{\theta}{2} + 120\right)$



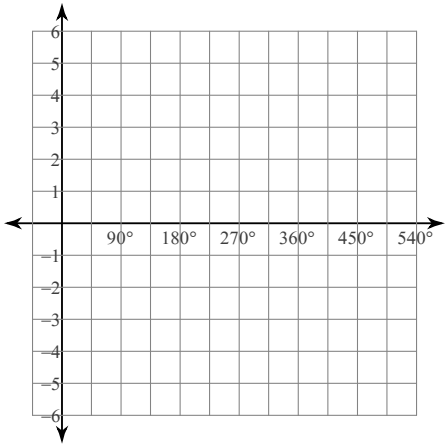
1913) $y = 2\sin\left(2\theta - 120\right)$



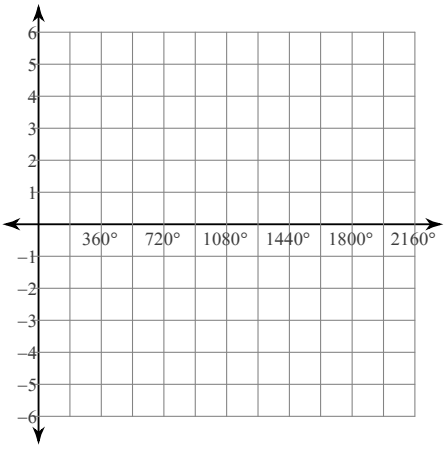
1914) $y = 4\cos\left(4\theta + 60\right)$



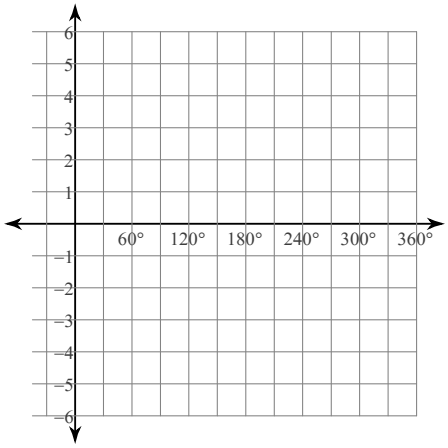
1915) $y = \frac{1}{2}\sin\,\theta$



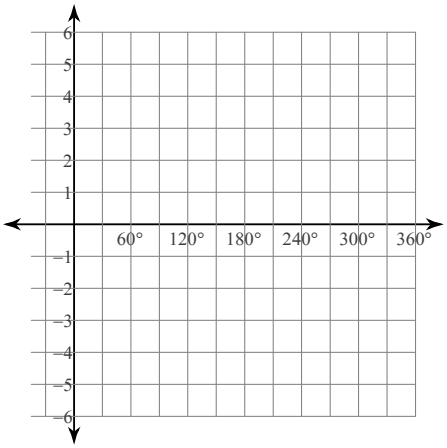
1916) $y = \frac{1}{2}\sin\left(\frac{\theta}{4} + 135\right)$



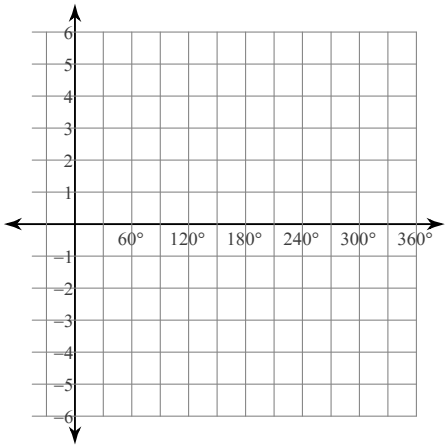
1917) $y = 3\cos(3\theta - 90)$



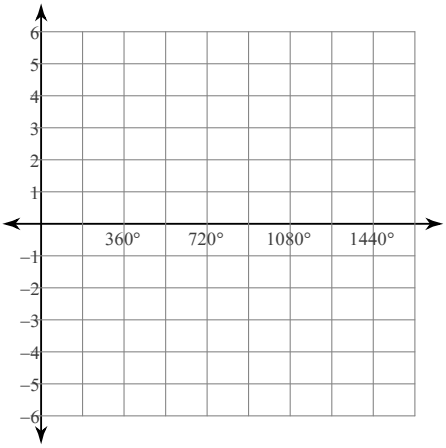
1918) $y = \frac{1}{2}\sin(4\theta - 135)$



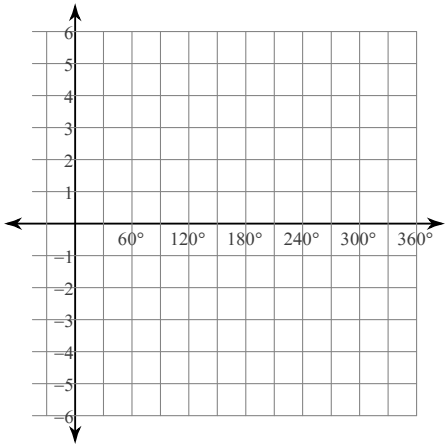
1919) $y = 4\sin(2\theta + 90)$



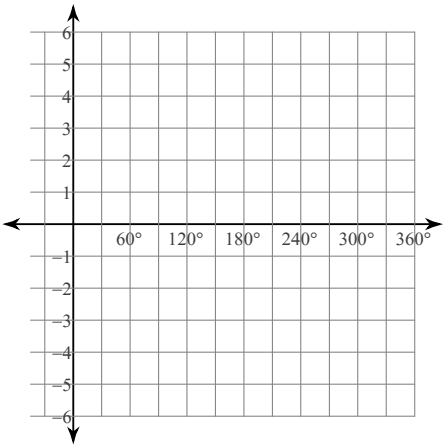
1920) $y = 3\sin\left(\frac{\theta}{3} - 135\right)$



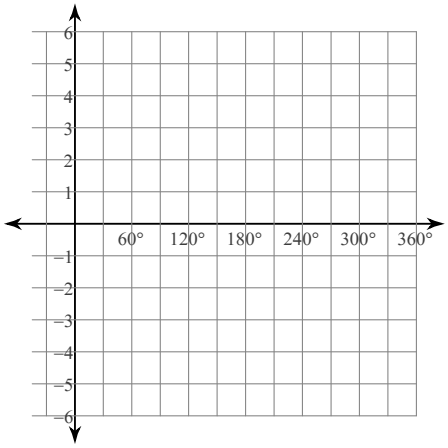
1921) $y = 2\cos(4\theta + 270)$



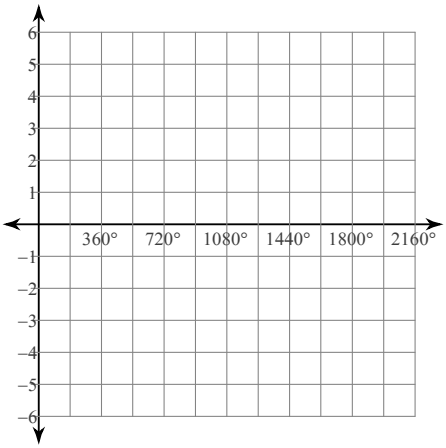
1922) $y = \frac{1}{2}\cos(4\theta + 330)$



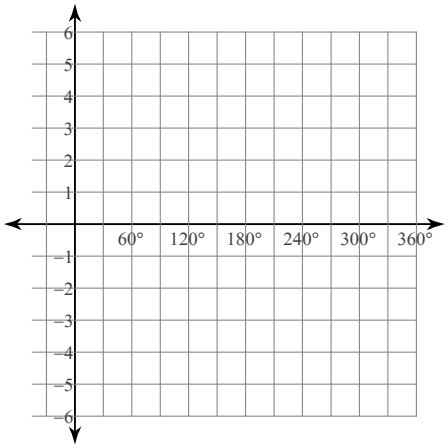
1923) $y = \sin(3\theta - 60)$



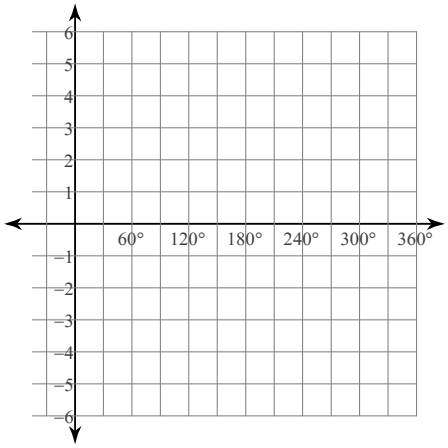
1924) $y = \cos\left(\frac{\theta}{4} - 90\right)$



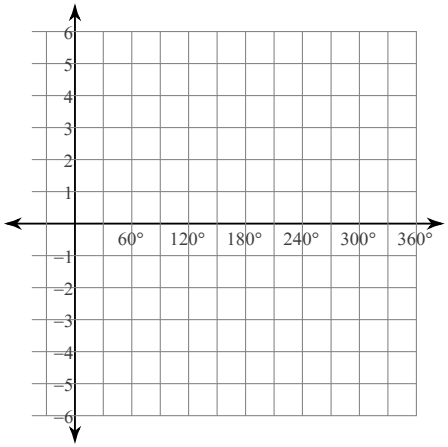
1925) $y = 2\sin(3\theta + 120)$



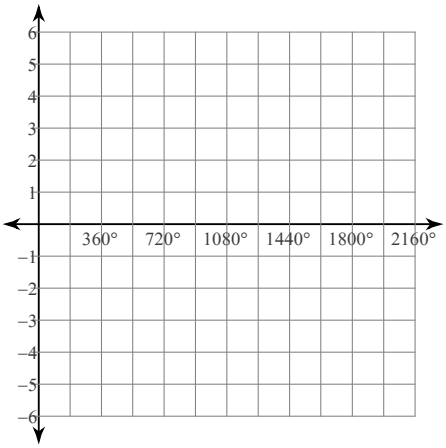
1926) $y = \frac{1}{2}\sin(4\theta + 120)$



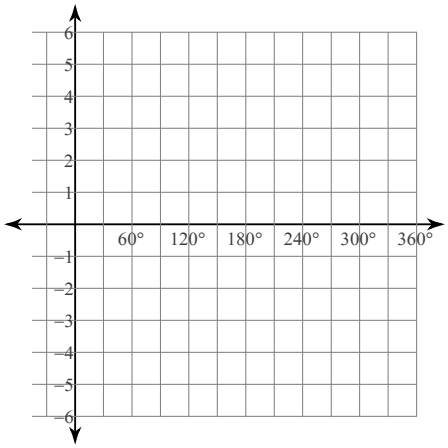
1927) $y = 2\sin(4\theta - 150)$



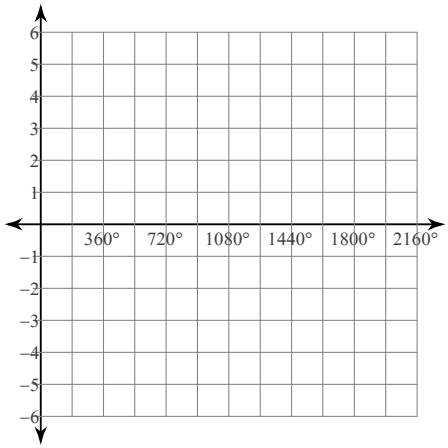
1928) $y = \frac{1}{2}\cos\left(\frac{\theta}{4} - 150\right)$



1929) $y = \frac{1}{2}\cos(4\theta + 90)$

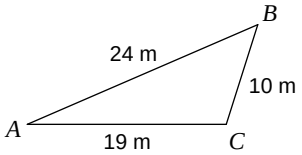


1930) $y = \frac{1}{2}\cos\left(\frac{\theta}{4} - 60\right)$

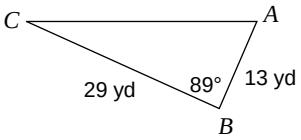


Solve each triangle. Round your answers to the nearest tenth.

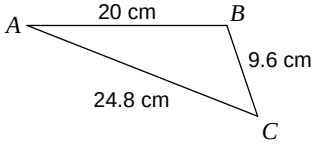
1931)



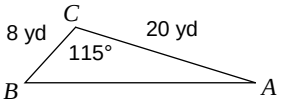
1932)



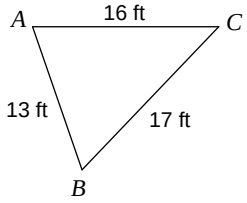
1933)



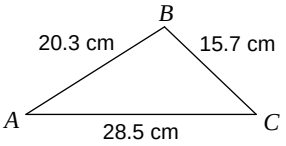
1934)



1935)



1936)



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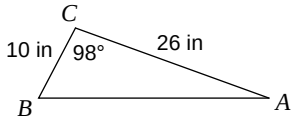

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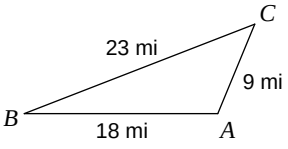

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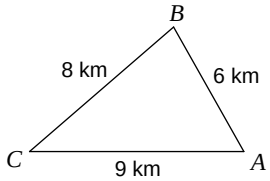

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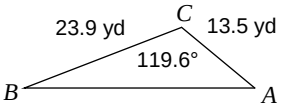

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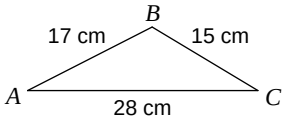

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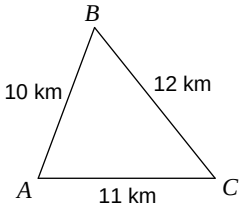

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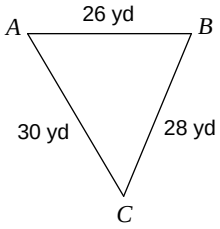

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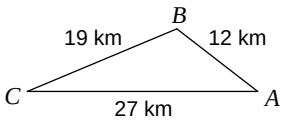

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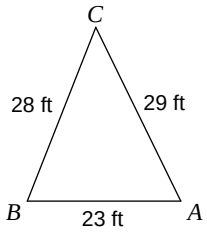
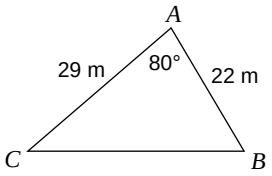


1946)



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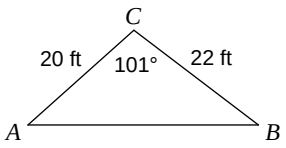
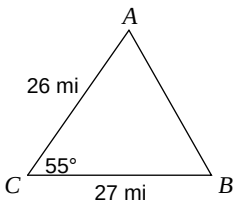
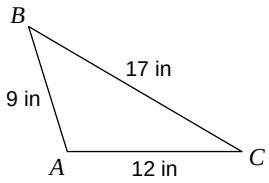


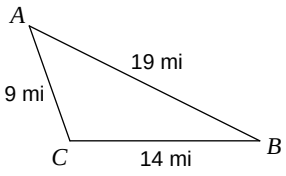
1948)



1949)

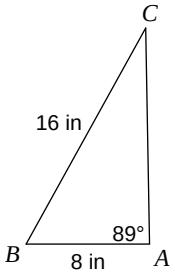


1950)

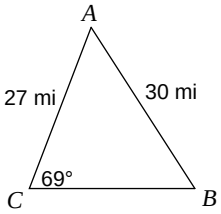


Find each measurement indicated. Round your answers to the nearest tenth.

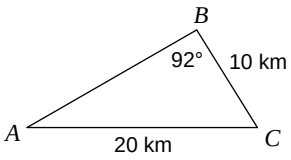
1951) Find $m\angle C$



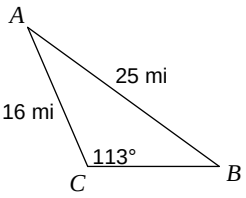
1952) Find $m\angle B$



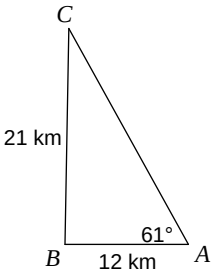
1953) Find $m\angle A$



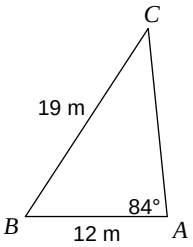
1954) Find $m\angle B$



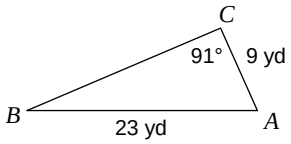
1955) Find $m\angle C$



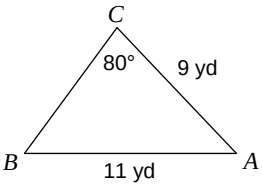
1956) Find $m\angle C$



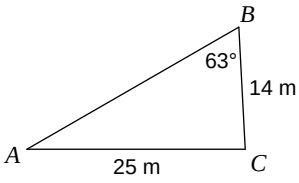
1957) Find $m\angle B$



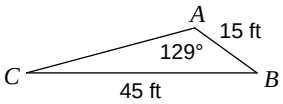
1958) Find $m\angle B$



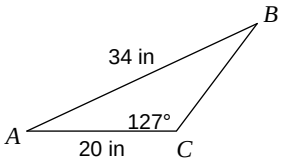
1959) Find $m\angle A$



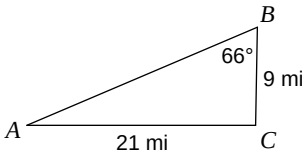
1960) Find $m\angle C$



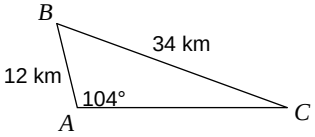
1961) Find $m\angle B$



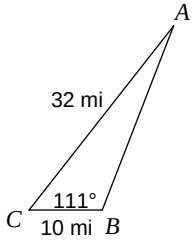
1962) Find $m\angle A$



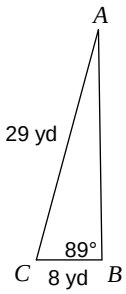
1963) Find $m\angle C$



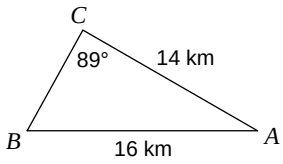
1964) Find $m\angle A$



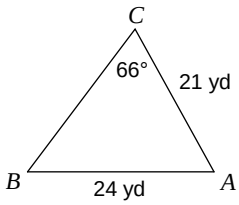
1965) Find $m\angle A$



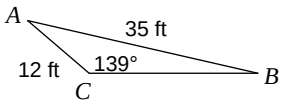
1966) Find $m\angle B$



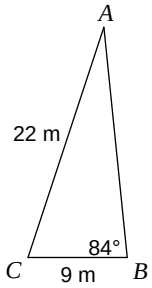
1967) Find $m\angle B$



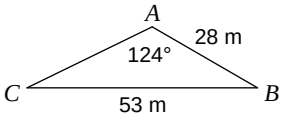
1968) Find $m\angle B$



1969) Find $m\angle A$

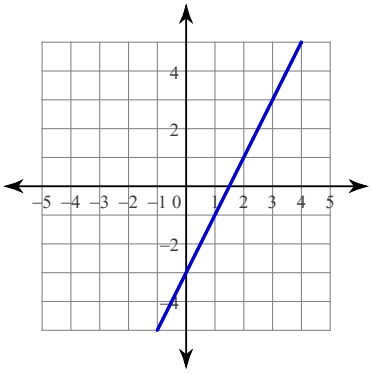


1970) Find $m\angle C$

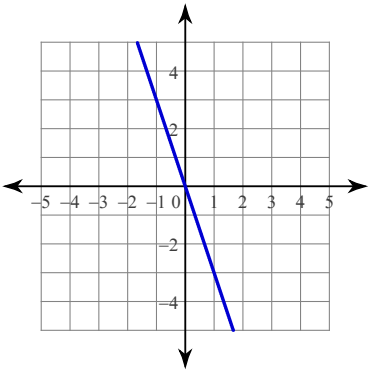


Write the slope-intercept form of the equation of each line.

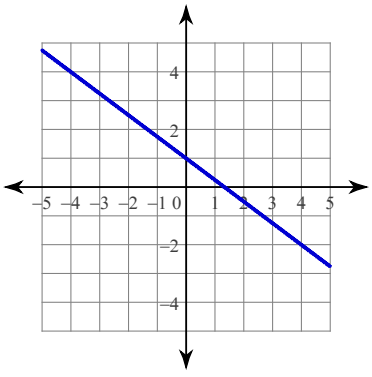
1971)



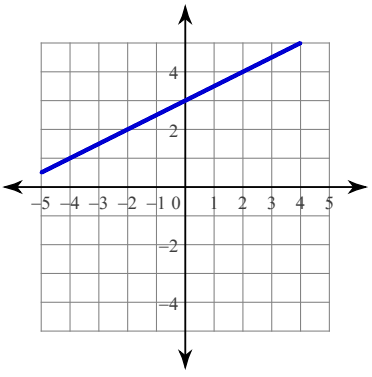
1972)



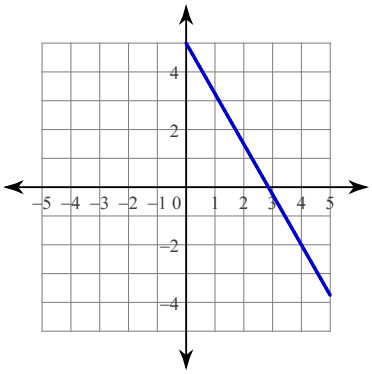
1973)



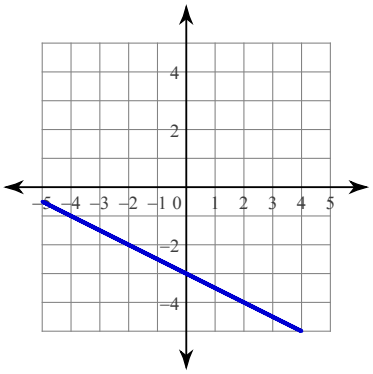
1974)



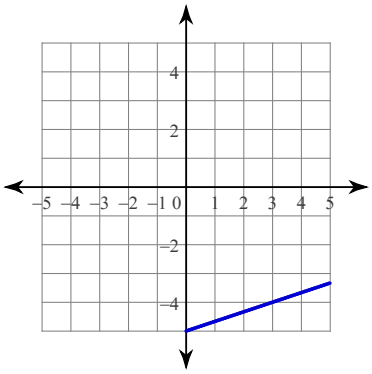
1975)



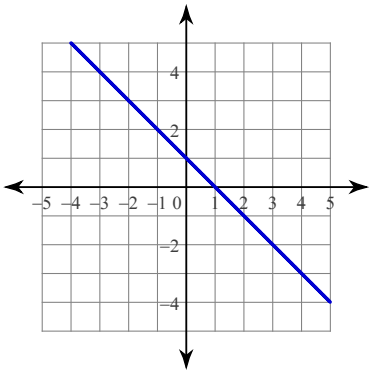
1976)



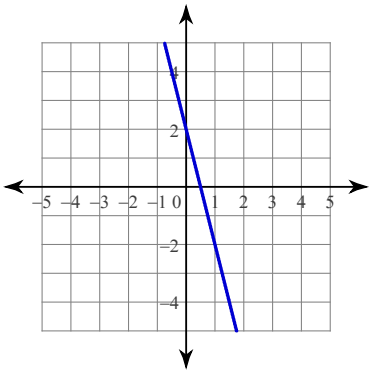
1977)



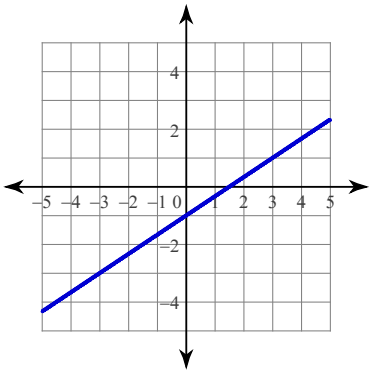
1978)



1979)



1980)



Use a calculator to approximate each to the nearest thousandth.

1981) $\log_6 43$

1982) $\log_6 59$

1983) $\ln 39$

1984) $\log_2 39$

1985) $\log_4 4.3$

1986) $\log_5 6.6$

1987) $\log_7 2.8$

1988) $\log_7 59$

1989) $\log_7 5$

1990) $\ln 3.1$

Condense each expression to a single logarithm.

1991) $5\log_3 6 + 4\log_3 7$

1992) $4\log_2 x + 12\log_2 y$

1993) $6\ln a + 3\ln b$

1994) $15\ln x - 5\ln y$

1995) $\frac{\log_9 x}{3} + \frac{\log_9 y}{3} + \frac{\log_9 z}{3}$

1996) $5\log_6 a + 6\log_6 b$

1997) $\frac{\log_7 u}{3} + \frac{\log_7 v}{3} + \frac{\log_7 w}{3}$

1998) $4\log_6 10 - 2\log_6 3$

1999) $3\log_4 a + 4\log_4 b$

2000) $\frac{\log_5 u}{3} + \frac{\log_5 v}{3} + \frac{\log_5 w}{3}$

Evaluate each expression.

2001) $\log_6 36$

2002) $\log_6 216$

2003) $\log_3 3$

2004) $\log_7 \frac{1}{49}$

2005) $\log_3 9$

2006) $\log_5 \frac{1}{25}$

2007) $\log_4 16$

2008) $\log_7 343$

2009) $\log_2 64$

2010) $\log_4 \frac{1}{64}$

2011) $6 \times 5 - 5$

2012) $2 \times 4 - 2$

2013) $6 + 2 - 4$

2014) $4 \times 4 - 2$

2015) $3 - (3 - 1)$

2016) $1 + 4 - 4$

2017) $2^3 \times 6$

2018) $2 \times 3 \times 5$

2019) $18 \div 6 \times 6$

2020) $2 \times 2 \times 6$

Expand each logarithm.

2021) $\log_8 \sqrt[3]{x \cdot y \cdot z}$

2022) $\log_8 (ab^6)^3$

2023) $\log_7 (6^2 \cdot 5^2)$

2024) $\log_6 \left(\frac{x^3}{y}\right)^6$

2025) $\log_5 (8^4 \cdot 11^2)$

2026) $\log_4 \left(\frac{8^4}{7}\right)^4$

2027) $\log_3 \sqrt{x \cdot y \cdot z}$

2028) $\log_3 (u^3 v^5)$

2029) $\log_2 \left(\frac{8^6}{3}\right)^5$

2030) $\log_5 \sqrt{x \cdot y \cdot z}$

2031) $\log_3 \left(\frac{x}{y^3}\right)^3$

2032) $\log_2 \frac{8^6}{11^2}$

2033) $\log_2 \left(c\sqrt{a \cdot b}\right)$

2034) $\log_9 \left(\frac{3}{10^4}\right)^6$

2035) $\ln \dfrac{u^5}{v^2}$

2036) $\log_8 \left(7\sqrt{11 \cdot 10}\right)$

2037) $\log_7 \left(\dfrac{x}{y^5}\right)^3$

2038) $\log_5 \dfrac{3^5}{2^2}$

2039) $\log_6 \left(7\sqrt{3 \cdot 2}\right)$

2040) $\log_5 \left(uv^2\right)^6$

Rewrite each equation in exponential form.

2041) $\log_{14} \dfrac{1}{196} = -2$

2042) $\log_3 \dfrac{1}{81} = -4$

2043) $\log_{18} \dfrac{1}{324} = -2$

2044) $\log_{11} 121 = 2$

2045) $\log_{15} 225 = 2$

2046) $\log_7 343 = 3$

2047) $\log_{18} 324 = 2$

2048) $\log_{14} 1 = 0$

2049) $\log_{19} 361 = 2$

2050) $\log_{\frac{1}{15}} \dfrac{1}{225} = 2$

Use the properties of logarithms and the values below to find the logarithm indicated. Do not use a calculator to evaluate the logs.

2051) $\log_6 8 \approx 1.2$
$\log_6 7 \approx 1.1$
$\log_6 10 \approx 1.3$
Find $\log_6 \dfrac{4}{5}$

2052) $\log_3 11 \approx 2.2$
$\log_3 10 \approx 2.1$
$\log_3 8 \approx 1.9$
Find $\log_3 \dfrac{1}{10}$

2053) $\log_4 6 \approx 1.3$
$\log_4 10 \approx 1.7$
$\log_4 7 \approx 1.4$
Find $\log_4 \dfrac{1}{7}$

2054) $\log_3 10 \approx 2.1$
$\log_3 7 \approx 1.8$
$\log_3 4 \approx 1.3$
Find $\log_3 \dfrac{1}{4}$

2055) $\log_7 12 \approx 1.3$
$\log_7 10 \approx 1.2$
$\log_7 9 \approx 1.1$
Find $\log_7 \frac{10}{7}$

2056) $\log_3 8 \approx 1.9$
$\log_3 10 \approx 2.1$
$\log_3 11 \approx 2.2$
Find $\log_3 64$

2057) $\log_3 10 \approx 2.1$
$\log_3 8 \approx 1.9$
$\log_3 11 \approx 2.2$
Find $\log_3 \frac{1}{8}$

2058) $\log_7 5 \approx 0.8$
$\log_7 12 \approx 1.3$
$\log_7 9 \approx 1.1$
Find $\log_7 35$

2059) $\log_8 6 \approx 0.9$
$\log_8 11 \approx 1.2$
$\log_8 10 \approx 1.1$
Find $\log_8 80$

2060) $\log_5 6 \approx 1.1$
$\log_5 8 \approx 1.3$
$\log_5 11 \approx 1.5$
Find $\log_5 \frac{8}{11}$

Simplify. Write "undefined" for expressions that are undefined.

2061) $\begin{bmatrix} 2 & 0 & -3 \\ 5 & -1 & 1 \end{bmatrix} - \begin{bmatrix} -4 & -2 & 1 \\ 0 & -2 & 5 \end{bmatrix}$

2062) $\begin{bmatrix} -3 \\ 6 \\ 5 \\ 2 \end{bmatrix} + \begin{bmatrix} -5 \\ 3 \\ -4 \\ 5 \end{bmatrix}$

2063) $\begin{bmatrix} -5 & 2 & 0 \end{bmatrix} + \begin{bmatrix} -1 & -2 & 0 \end{bmatrix}$

2064) $\begin{bmatrix} 3 & 3 \\ -5 & 1 \\ 2 & -6 \end{bmatrix} - \begin{bmatrix} -6 & 0 \\ 0 & -4 \\ -2 & 0 \end{bmatrix}$

2065) $\begin{bmatrix} 0 & 6 & 5 & 6 \end{bmatrix} - \begin{bmatrix} -4 & 5 & -6 & -6 \end{bmatrix}$

2066) $\begin{bmatrix} 4 \\ -5 \end{bmatrix} - \begin{bmatrix} -3 \\ -2 \end{bmatrix}$

2067) $\begin{bmatrix} 3 & 3 & 2 \end{bmatrix} + \begin{bmatrix} 2 & -3 & 2 \end{bmatrix}$

2068) $\begin{bmatrix} 1 & 3 & 3 \end{bmatrix} - \begin{bmatrix} 5 & -6 & 3 \end{bmatrix}$

2069) $\begin{bmatrix} -1 & 1 \\ -2 & -3 \end{bmatrix} + \begin{bmatrix} 4 & 0 \\ 0 & -5 \end{bmatrix}$

2070) $\begin{bmatrix} 6 & -4 \end{bmatrix} + \begin{bmatrix} 1 & 0 \end{bmatrix}$

2071) $\begin{bmatrix} 4 & -5 \\ 2 & -2 \end{bmatrix} \cdot \begin{bmatrix} -1 & -2 & 0 \\ -3 & -3 & -4 \end{bmatrix}$

2072) $\begin{bmatrix} 1 & -3 \\ 4 & 4 \end{bmatrix} \cdot \begin{bmatrix} -5 & -6 \\ 0 & 5 \end{bmatrix}$

2073) $\begin{bmatrix} 2 & -6 & 6 \end{bmatrix} \cdot \begin{bmatrix} 1 & -5 \\ -6 & -5 \\ -5 & -2 \end{bmatrix}$

2074) $\begin{bmatrix} 0 & -4 & -1 \\ 2 & 3 & 3 \end{bmatrix} \cdot \begin{bmatrix} -6 & 2 \\ -4 & 2 \\ -4 & 3 \end{bmatrix}$

2075) $\begin{bmatrix} 1 & 5 \\ -2 & -2 \end{bmatrix} \cdot \begin{bmatrix} 3 & -6 & 1 \\ 6 & 5 & 3 \end{bmatrix}$

2076) $\begin{bmatrix} -3 & -6 \\ 6 & 2 \end{bmatrix} \cdot \begin{bmatrix} 1 & -6 & -4 \\ 2 & 6 & -3 \end{bmatrix}$

2077) $\begin{bmatrix} 6 & -2 & -3 \\ -3 & 3 & 4 \end{bmatrix} \cdot \begin{bmatrix} 1 & -4 \\ -1 & -5 \\ -4 & -2 \end{bmatrix}$

2078) $\begin{bmatrix} 3 & 0 & -2 \end{bmatrix} \cdot \begin{bmatrix} 5 & -1 \\ 5 & 0 \\ -5 & -5 \end{bmatrix}$

2079) $\begin{bmatrix} 1 \\ 5 \\ -4 \end{bmatrix} \cdot \begin{bmatrix} -6 & -5 \end{bmatrix}$

2080) $\begin{bmatrix} 0 & 0 \\ -3 & -6 \end{bmatrix} \cdot \begin{bmatrix} 1 & 0 & -5 \\ 3 & 4 & 0 \end{bmatrix}$

2081) $-5\begin{bmatrix} 3 & 3 \\ 0 & 0 \end{bmatrix}$

2082) $-3\begin{bmatrix} 2 \\ 1 \\ 4 \\ -5 \end{bmatrix}$

2083) $5\begin{bmatrix} 0 & 5 \\ 1 & 4 \\ 6 & 1 \end{bmatrix}$

2084) $5\begin{bmatrix} 1 \\ 0 \\ 6 \\ -4 \end{bmatrix}$

2085) $2\begin{bmatrix} -3 & -2 & -1 \end{bmatrix}$

2086) $2\begin{bmatrix} 2 & -2 \end{bmatrix}$

2087) $\begin{bmatrix} 2 & -1 \end{bmatrix} - \begin{bmatrix} 0 & -1 \end{bmatrix}$

2088) $\begin{bmatrix} 0 & 6 \\ 0 & -3 \\ -5 & -4 \end{bmatrix} + \begin{bmatrix} -2 & 5 \\ 0 & -6 \\ -3 & 0 \end{bmatrix}$

2089) $\begin{bmatrix} 1 \\ 5 \\ 5 \end{bmatrix} + \begin{bmatrix} -5 \\ 1 \\ -3 \end{bmatrix}$

2090) $\begin{bmatrix} 3 & -2 \\ 1 & 0 \\ -5 & 6 \end{bmatrix} - \begin{bmatrix} 0 & 2 \\ 5 & -3 \\ 5 & 2 \end{bmatrix}$

2091) $-5\begin{bmatrix} 2 \\ 2 \end{bmatrix}$

2092) $-4\begin{bmatrix} -5 & 3 & -4 \\ 3 & 3 & 0 \end{bmatrix}$

2093) $4\begin{bmatrix} 6 & -1 \end{bmatrix}$

2094) $4\begin{bmatrix} -1 & -3 & -4 \end{bmatrix}$

2095) $3\begin{bmatrix} -1 & 0 & -6 & 2 \end{bmatrix}$

2096) $5\begin{bmatrix} -1 & 2 & -3 \\ 6 & 2 & 5 \end{bmatrix}$

2097) $-5\begin{bmatrix} -3 \\ 0 \\ 3 \end{bmatrix}$

2098) $5\begin{bmatrix} -2 & -1 \\ 2 & -5 \\ 2 & -1 \end{bmatrix}$

2099) $4\begin{bmatrix} -6 & 6 & -5 & 0 \end{bmatrix}$

2100) $5\begin{bmatrix} 6 & 0 & 4 \end{bmatrix}$

Find the inverse of each matrix.

2101) $\begin{bmatrix} 9 & -4 \\ 6 & -4 \end{bmatrix}$

2102) $\begin{bmatrix} -7 & 11 \\ 3 & -7 \end{bmatrix}$

2103) $\begin{bmatrix} -6 & -5 \\ 6 & 4 \end{bmatrix}$

2104) $\begin{bmatrix} 5 & -1 \\ -3 & 1 \end{bmatrix}$

2105) $\begin{bmatrix} 1 & -2 \\ -6 & 4 \end{bmatrix}$

2106) $\begin{bmatrix} 10 & -10 \\ 7 & -8 \end{bmatrix}$

2107) $\begin{bmatrix} -5 & 2 \\ 7 & 1 \end{bmatrix}$

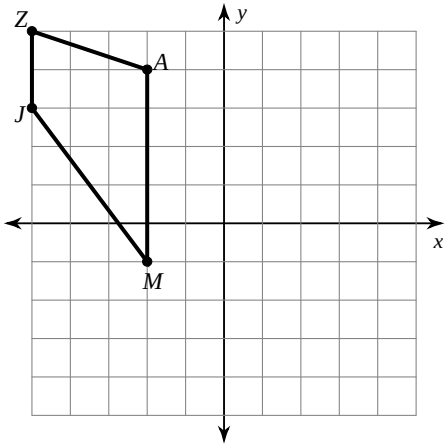
2108) $\begin{bmatrix} 1 & 2 \\ 2 & -8 \end{bmatrix}$

2109) $\begin{bmatrix} -4 & -4 \\ -2 & 2 \end{bmatrix}$

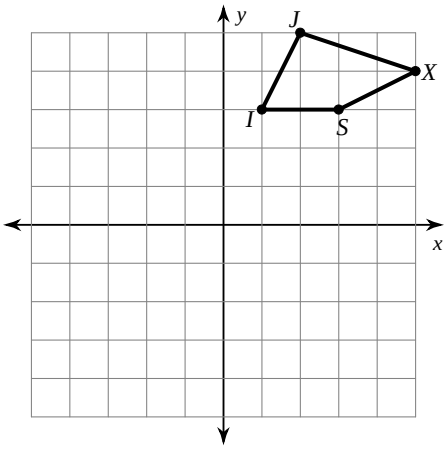
2110) $\begin{bmatrix} 2 & -5 \\ -5 & 9 \end{bmatrix}$

Graph the image of the figure using the transformation given.

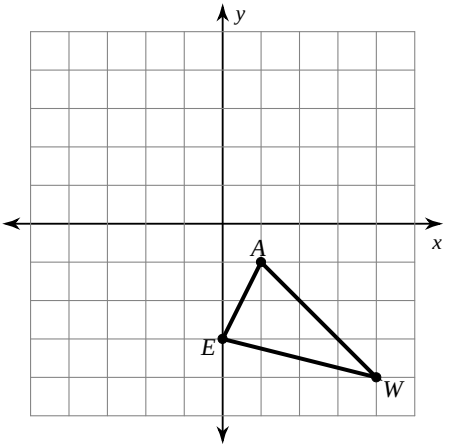
2111) reflection across the x-axis



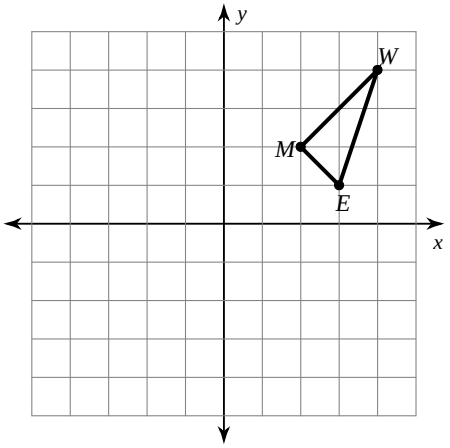
2112) rotation 90° counterclockwise about the origin



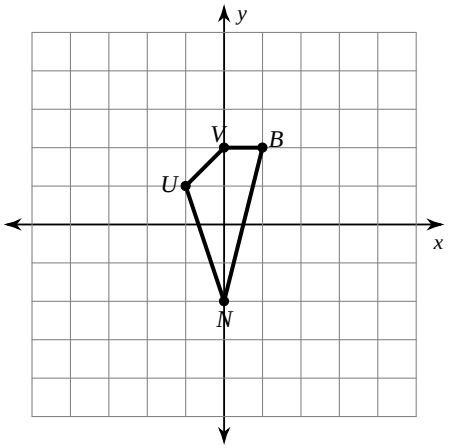
2113) reflection across $y = x$



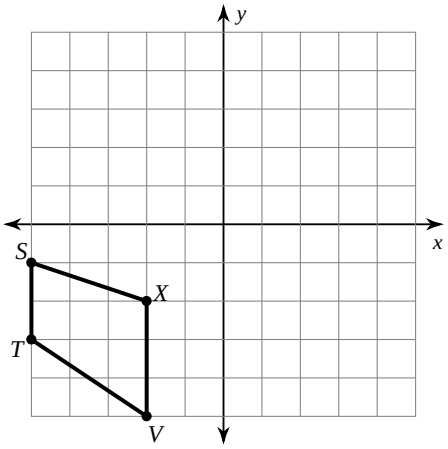
2114) translation: 7 units left and 3 units down



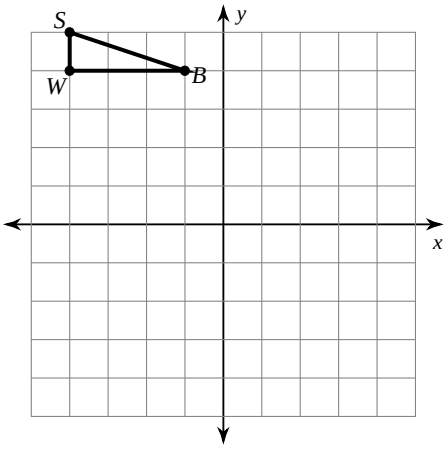
2115) dilation of 2.5



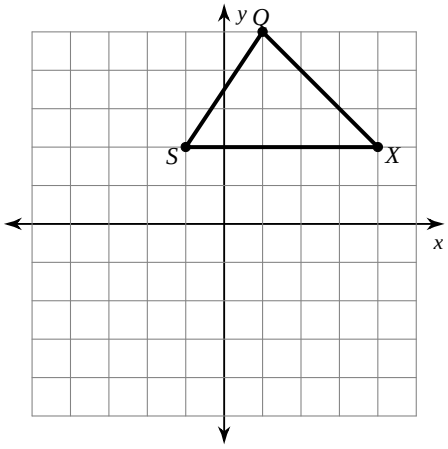
2116) rotation 270° clockwise about the origin



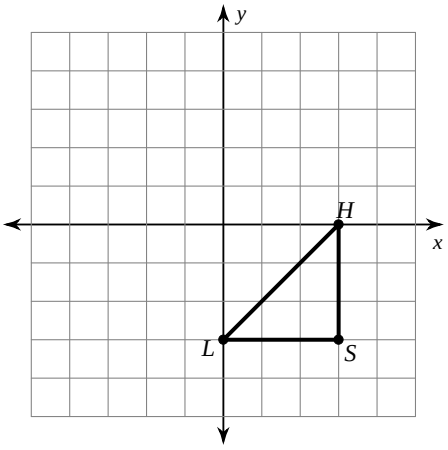
2117) rotation 90° clockwise about the origin



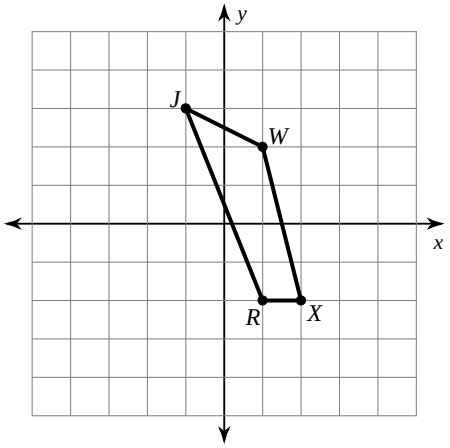
2118) reflection across the y-axis



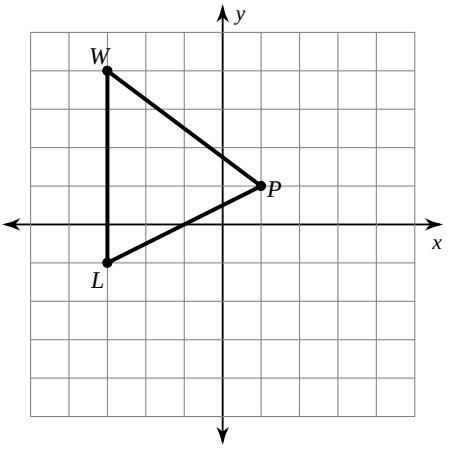
2119) translation: 3 units left and 1 unit up



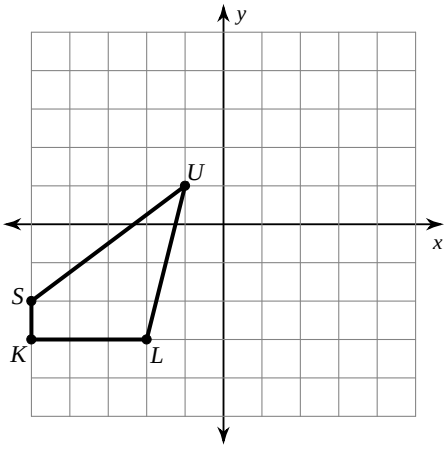
2120) dilation of 1.5



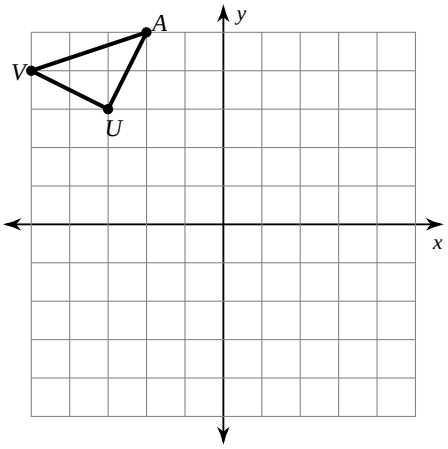
2121) reflection across $y = x$



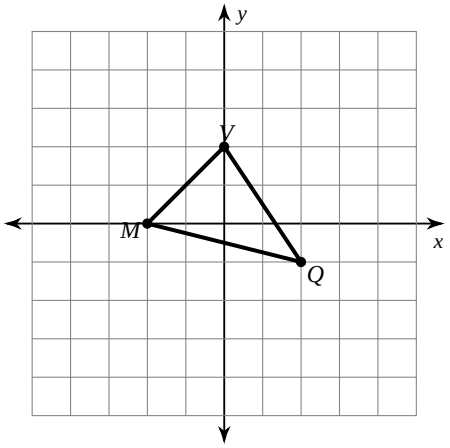
2122) rotation 270° clockwise about the origin



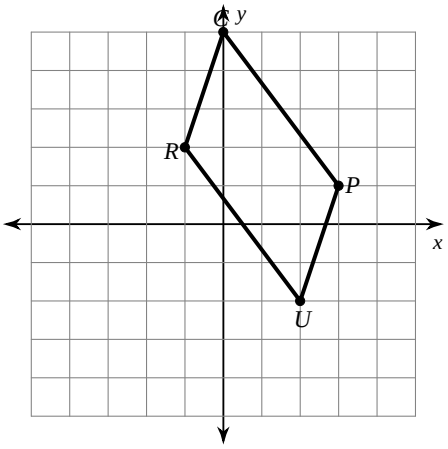
2123) translation: 6 units right



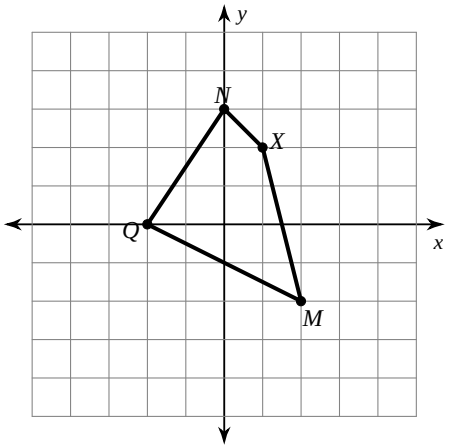
2124) dilation of 2



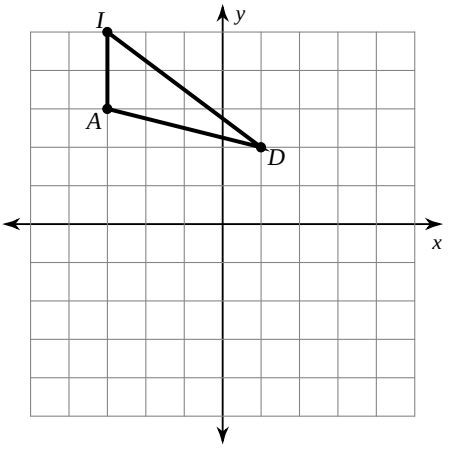
2125) rotation 180° about the origin



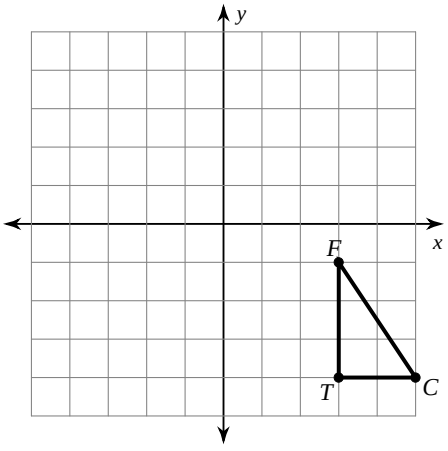
2126) dilation of 1.5



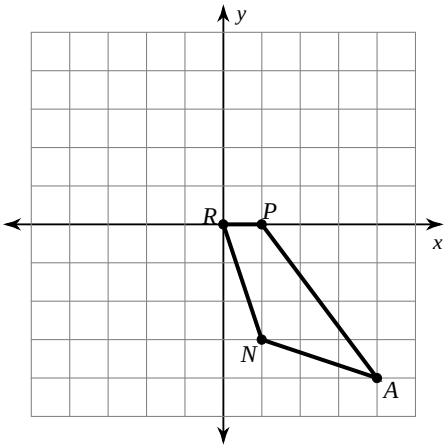
2127) reflection across $y = x$



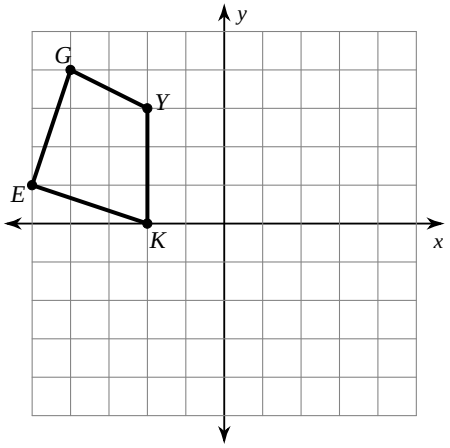
2128) translation: 4 units left and 4 units up



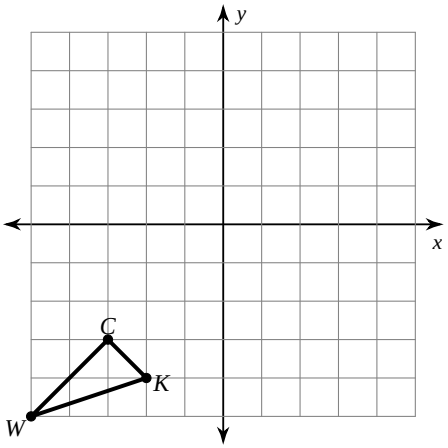
2129) translation: 2 units left and 4 units up



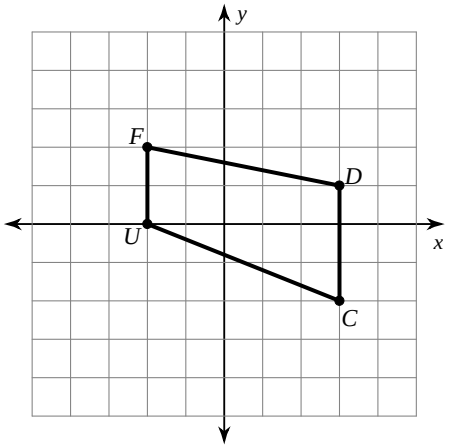
2130) dilation of 0.25



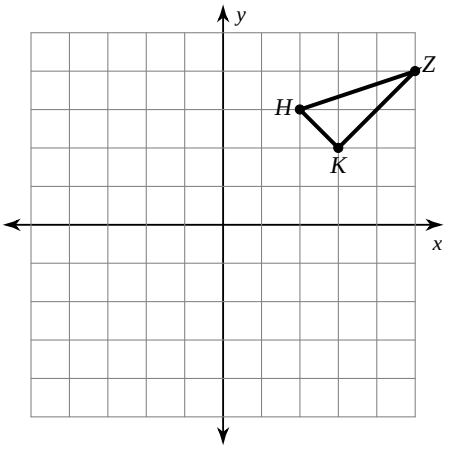
2131) dilation of 0.25



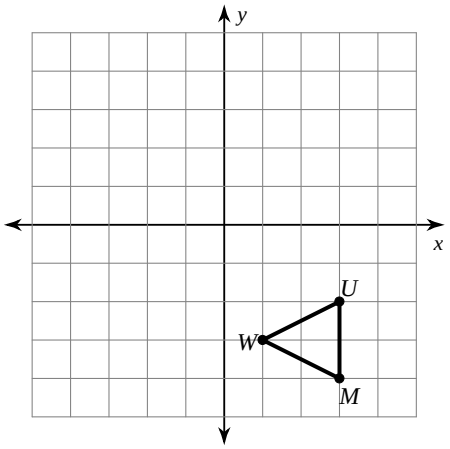
2132) dilation of $\frac{3}{2}$



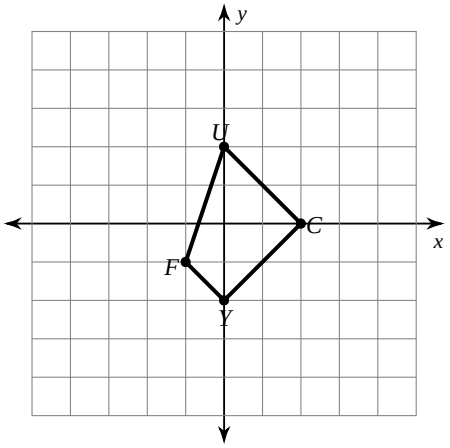
2133) dilation of 0.25



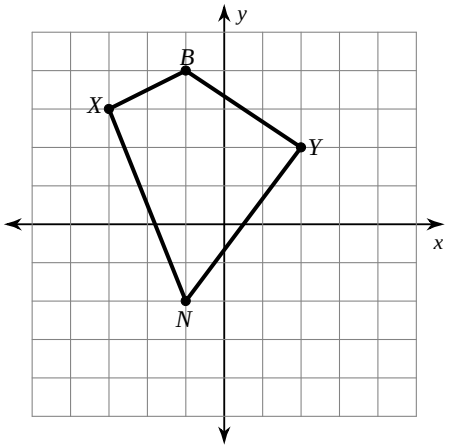
2134) dilation of 0.5



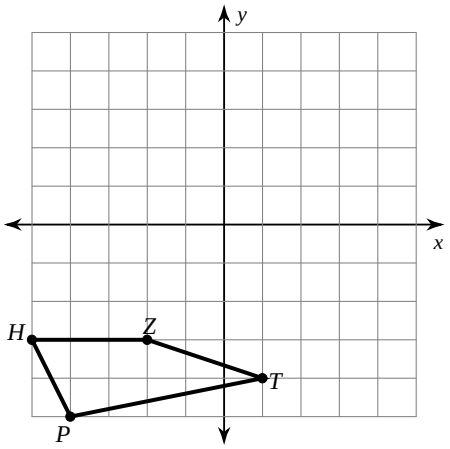
2135) dilation of 2.5



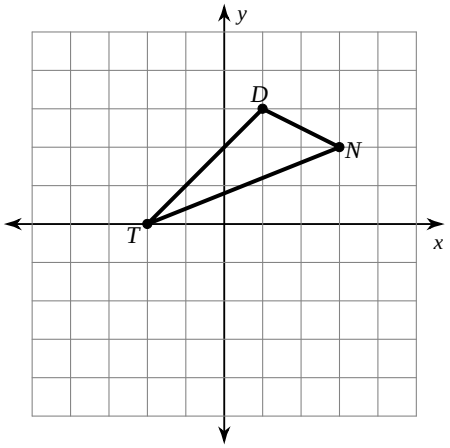
2136) dilation of $\frac{1}{2}$



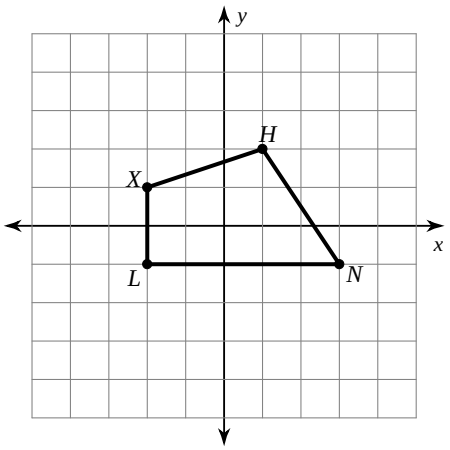
2137) dilation of $\frac{1}{2}$



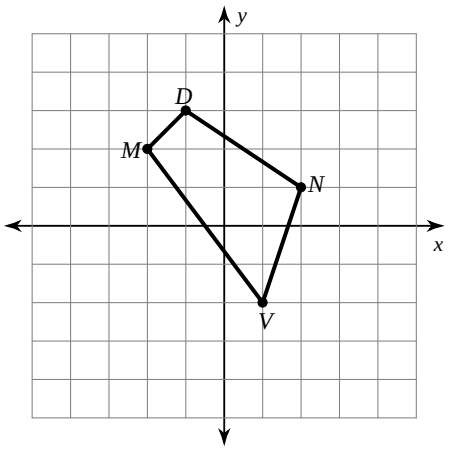
2138) dilation of 1.5



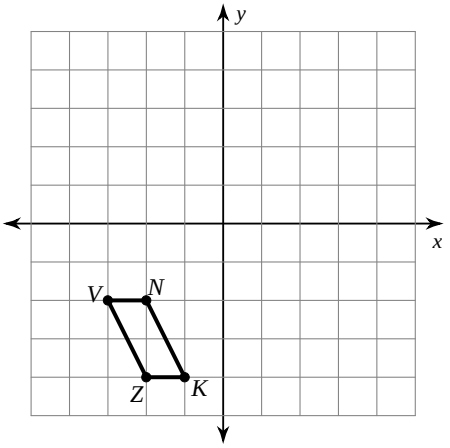
2139) dilation of 1.5



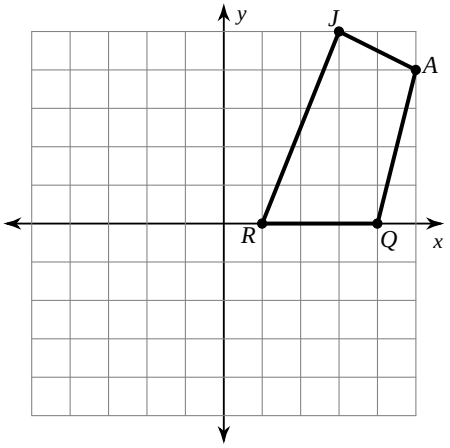
2140) dilation of 1.5



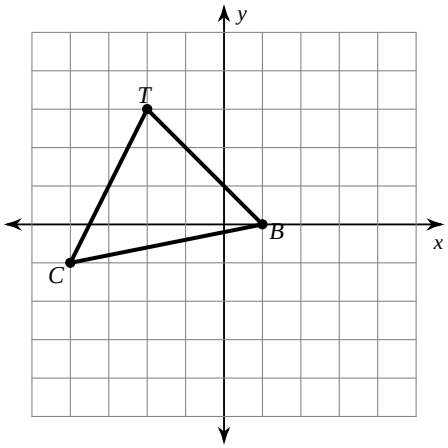
2141) reflection across $y = -x$



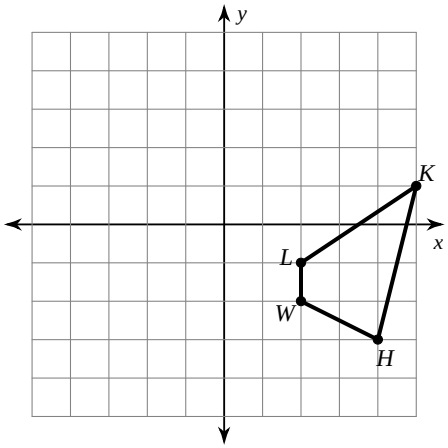
2142) reflection across $y = x$



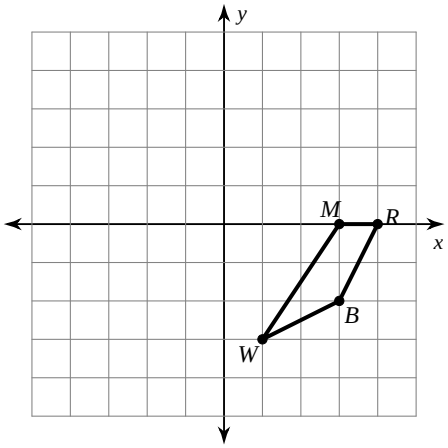
2143) reflection across the x-axis



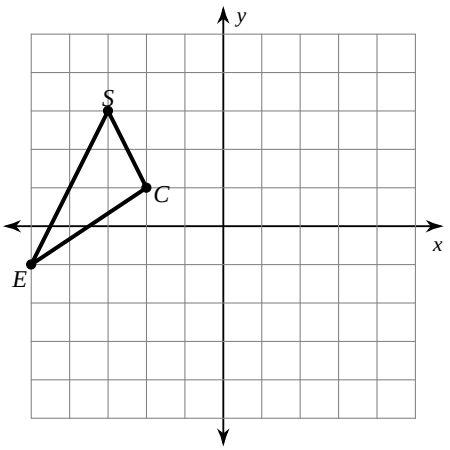
2144) reflection across the y-axis



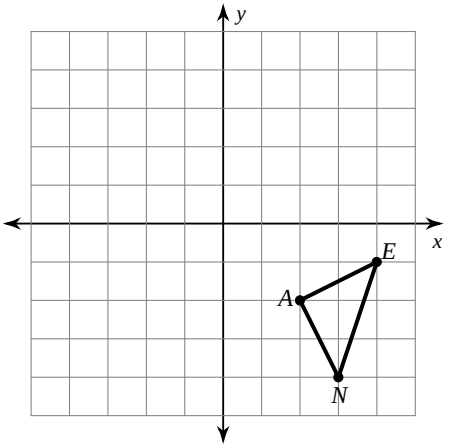
2145) reflection across the y-axis



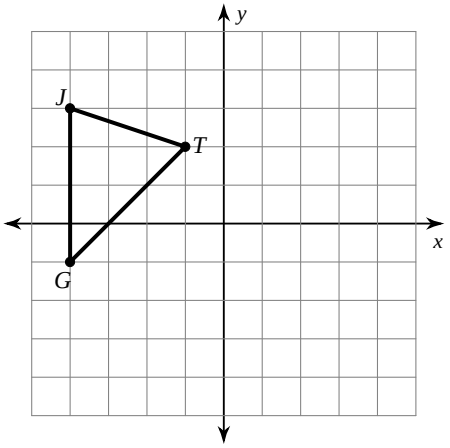
2146) reflection across $y = -x$



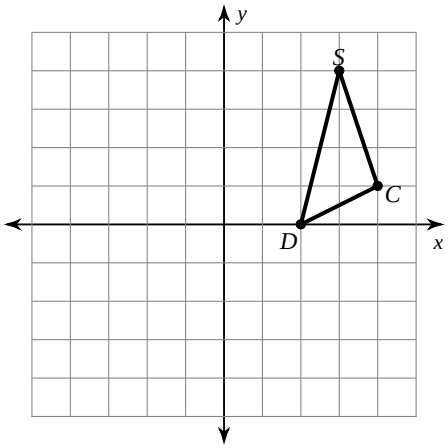
2147) reflection across $y = -x$



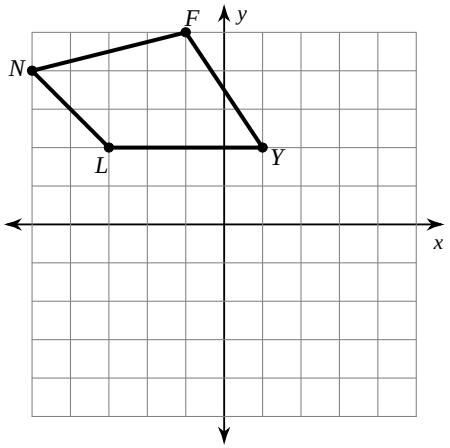
2148) reflection across $y = x$



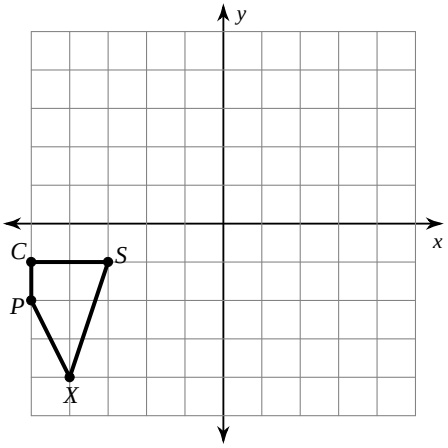
2149) reflection across the y-axis



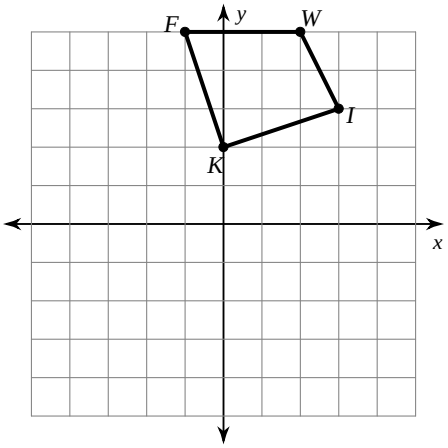
2150) reflection across the y-axis



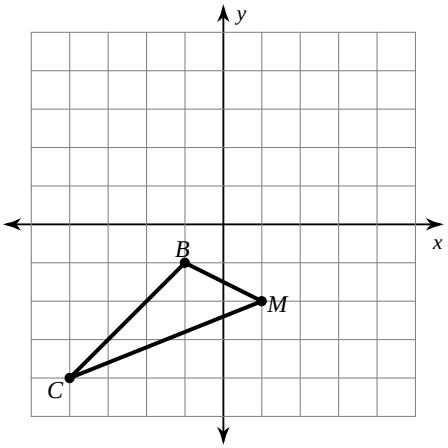
2151) rotation 270° counterclockwise about the origin



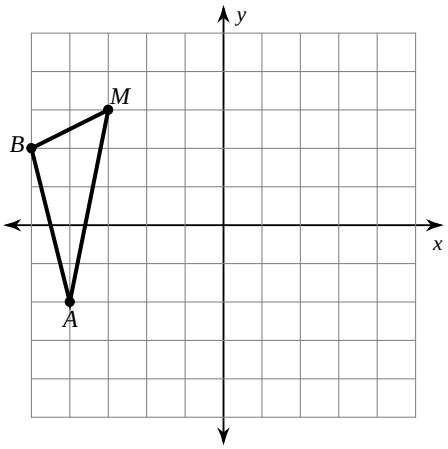
2152) rotation 90° clockwise about the origin



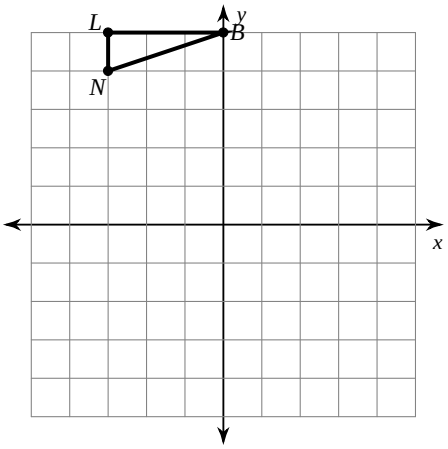
2153) rotation 180° about the origin



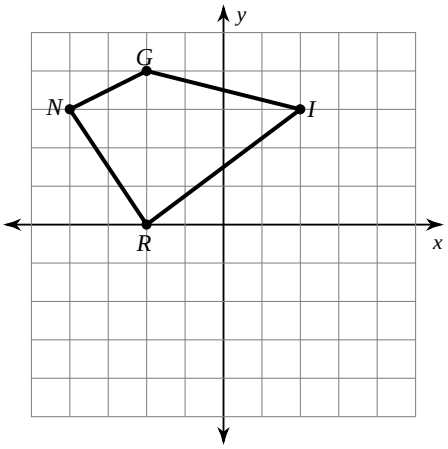
2154) rotation 90° counterclockwise about the origin



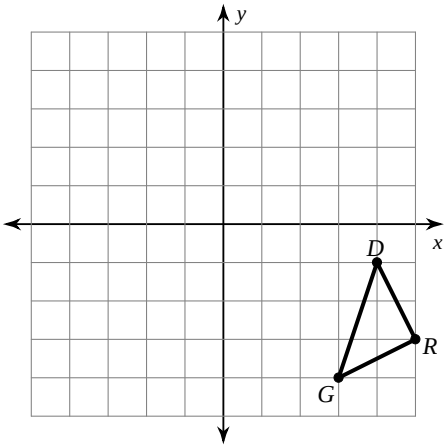
2155) rotation 270° clockwise about the origin



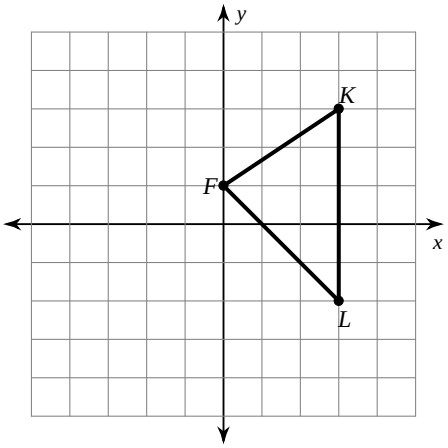
2156) rotation 90° clockwise about the origin



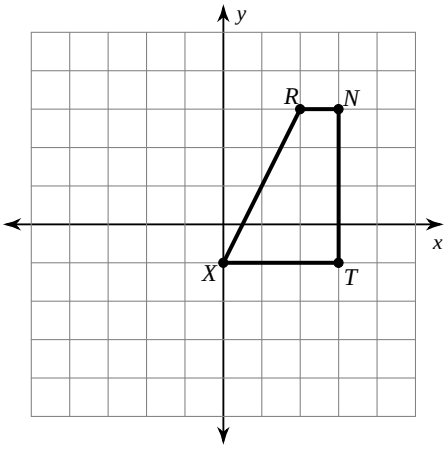
2157) rotation 90° counterclockwise about the origin



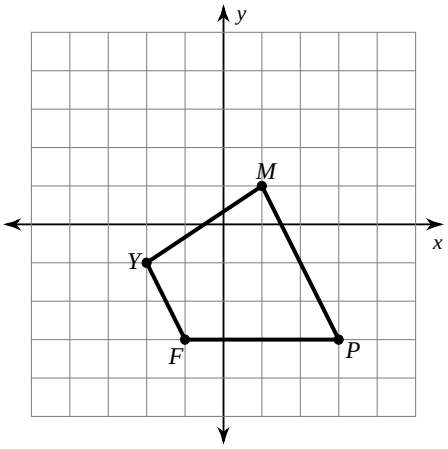
2158) rotation 90° counterclockwise about the origin



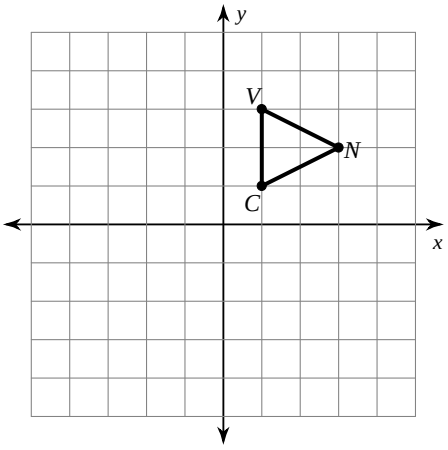
2159) rotation 270° clockwise about the origin



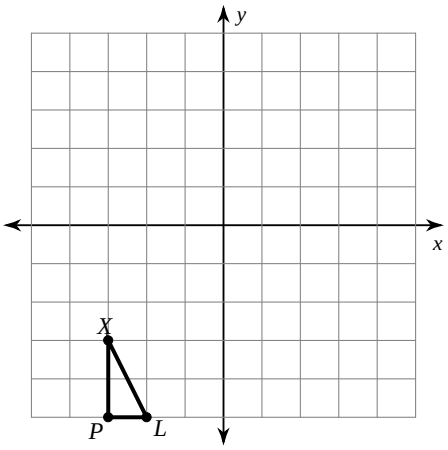
2160) rotation 180° about the origin



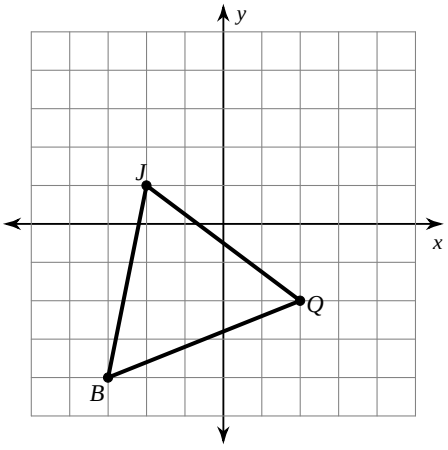
2161) translation: 3 units left



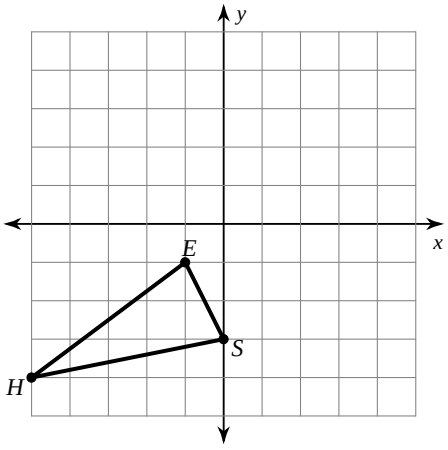
2162) translation: 7 units right and 1 unit up



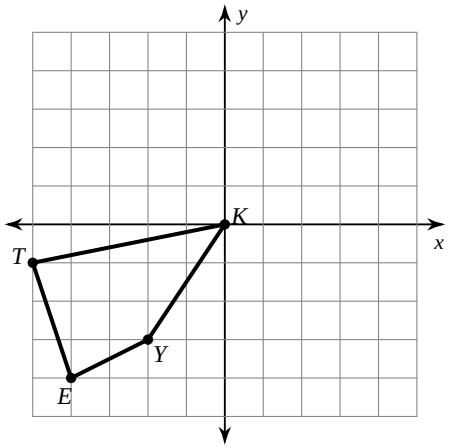
2163) translation: 2 units left and 2 units up



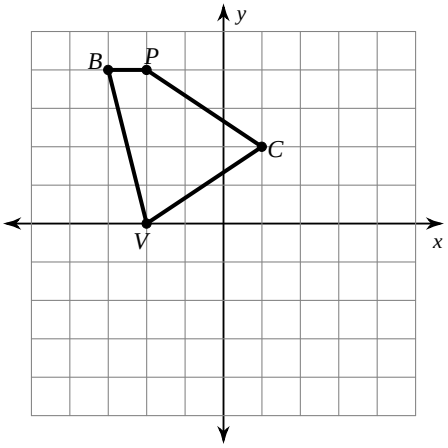
2164) translation: 1 unit right



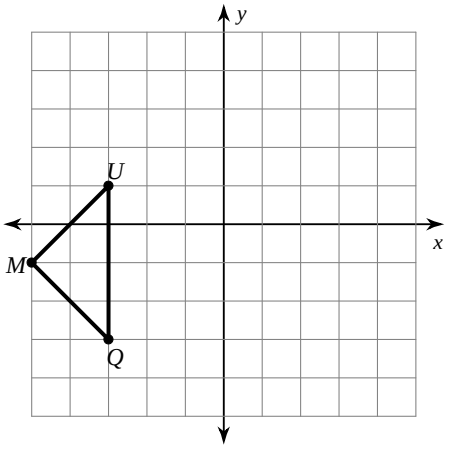
2165) translation: 1 unit up



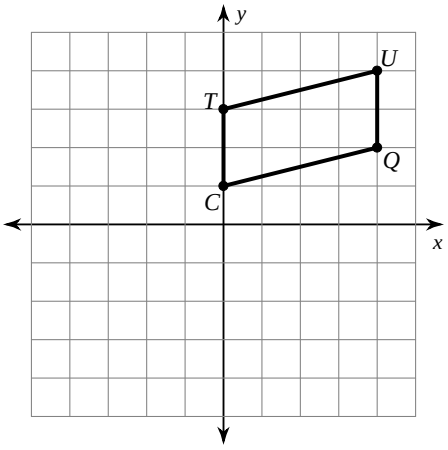
2166) translation: 1 unit left and 2 units down



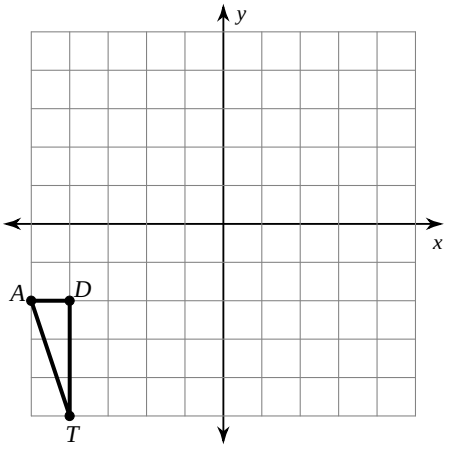
2167) translation: 2 units up



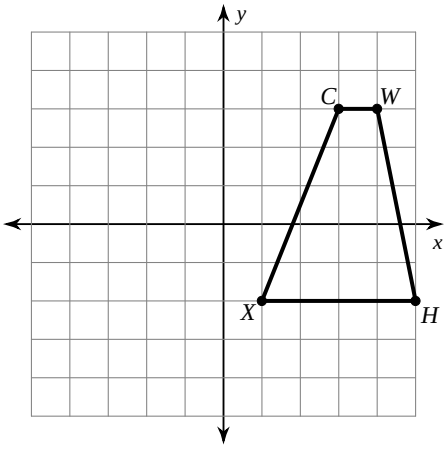
2168) translation: 1 unit left and 5 units down



2169) translation: 8 units right and 3 units up



2170) translation: 5 units left and 2 units down



2171) A metal alloy weighing 6 oz. and containing 65% copper is melted and mixed with 8 oz. of pure copper. What percent of the resulting alloy is copper?

2172) A metal alloy weighing 2 kg and containing 60% silver is melted and mixed with 1 kg of a different alloy which contains 30% silver. What percent of the resulting alloy is silver?

2173) A metal alloy weighing 3 lb. and containing 20% gold is melted and mixed with 12 lb. of a different alloy which contains 10% gold. What percent of the resulting alloy is gold?

2174) For her birthday party Molly mixed together 10 gal. of Brand A fruit punch and 5 gal. of Brand B. Brand A contains 50% fruit juice and Brand B contains 44% fruit juice. What percent of the mixture is fruit juice?

2175) Arjun mixed 11 lbs. of peanuts with 9 lbs. of mixed nuts containing 20% peanuts. Peanuts are what percent of the new mixture?

2176) For his birthday party Trevon mixed together 9 gal. of Brand A fruit punch and 2 gal. of Brand B. Brand A contains 6% fruit juice and Brand B contains 28% fruit juice. What percent of the mixture is fruit juice?

2177) 1 lb of Indonesian cinnamon which costs \$12/lb was combined with 4 lb of Thai cinnamon which costs \$17/lb. Find the cost per lb of the mixture.

2178) A metal alloy weighing 9 oz. and containing 90% gold is melted and mixed with 11 oz. of a different alloy which contains 50% gold. What percent of the resulting alloy is gold?

2179) 7 yd^3 of soil containing 35% silt was mixed into 3 yd^3 of soil containing 55% silt. What is the silt content of the mixture?

2180) A saline solution was made by mixing 5 ml of a 60% saline solution and 7 ml of a 36% saline solution. What is the concentration of the mixture?

2181) The sum of the digits of a certain two-digit number is 7. When you reverse its digits you decrease the number by 63. What is the number?

2182) When you reverse the digits in a certain two-digit number you increase its value by 9. Find the number if the sum of its digits is 11.

2183) When you reverse the digits in a certain two-digit number you decrease its value by 18. What is the number if the sum of its digits is 4?

2184) The sum of the digits of a certain two-digit number is 6. When you reverse its digits you increase the number by 36. What is the number?

2185) A boat traveled 176 miles downstream and back. The trip downstream took 8 hours. The trip back took 88 hours. What is the speed of the boat in still water? What is the speed of the current?

2186) When you reverse the digits in a certain two-digit number you decrease its value by 54. What is the number if the sum of its digits is 10?

2187) Jaidee and Dan each improved their yards by planting rose bushes and ivy. They bought their supplies from the same store. Jaidee spent \$69 on 9 rose bushes and 8 pots of ivy. Dan spent \$27 on 3 rose bushes and 4 pots of ivy. Find the cost of one rose bush and the cost of one pot of ivy.

2188) Sarawong and Danielle are selling cheesecakes for a school fundraiser. Customers can buy pecan cheesecakes and apple cheesecakes. Sarawong sold 7 pecan cheesecakes and 3 apple cheesecakes for a total of $159. Danielle sold 1 pecan cheesecake and 9 apple cheesecakes for a total of $177. Find the cost each of one pecan cheesecake and one apple cheesecake.

2189) Mike and Nicole each improved their yards by planting hostas and ivy. They bought their supplies from the same store. Mike spent $105 on 10 hostas and 5 pots of ivy. Nicole spent $113 on 5 hostas and 8 pots of ivy. What is the cost of one hosta and the cost of one pot of ivy?

2190) When you reverse the digits in a certain two-digit number you increase its value by 9. What is the number if the sum of its digits is 13?

2191) A cargo plane left Singapore and flew south. A passenger plane left two hours later flying 90 mph faster in an effort to catch up to it. After five hours the passenger plane finally caught up. Find the cargo plane's average speed.

2192) A diesel train left Bangalore at the same time as a cattle train. The trains traveled in opposite directions. The cattle train traveled at a speed of 80 mph. After 15 hours they were 1725 mi. apart. How fast did the diesel train travel?

2193) Adam left home and traveled toward the train station at an average speed of 64 mph. Ndiba left some time later traveling in the same direction at an average speed of 80 mph. After traveling for four hours Ndiba caught up with Adam. Find the number of hours Adam traveled before Ndiba caught up.

2194) A jet left Tokyo and flew west at an average speed of 395 mph. An Air Force plane left one hour later and flew in the opposite direction with an average speed of 380 mph. Find the number of hours the Air Force plane needs to fly before the planes are 7370 mi. apart.

2195) Mei left school and drove toward the dump at an average speed of 30 km/h. Shayna left one hour later and drove in the same direction but with an average speed of 40 km/h. How long did Mei drive before Shayna caught up?

2196) A cruise ship left the Azores and traveled toward a navigational buoy at an average speed of 15 km/h. Some time later a submarine left traveling in the same direction but at an average speed of 25 km/h. After traveling for six hours the submarine caught up with the cruise ship. Find the number of hours the cruise ship traveled before the submarine caught up.

2197) Jose traveled to his cabin on the lake and back. The trip there took four hours and the trip back took five hours. He averaged 20 km/h on the return trip. Find the average speed of the trip there.

2198) Eugene left home and drove toward the capital at an average speed of 25 mph. Gabriella left at the same time and drove in the opposite direction with an average speed of 70 mph. How long does Gabriella need to drive before they are 380 mi. apart?

2199) Natalie left home and drove toward the mountains at an average speed of 30 mph. Some time later Matt left driving in the same direction but at an average speed of 50 mph. After driving for three hours Matt caught up with Natalie. Find the number of hours Natalie drove before Matt caught up.

2200) Amanda traveled to the recycling plant and back. The trip there took three hours and the trip back took two hours. She averaged 20 mph faster on the return trip than on the outbound trip. Find Amanda's average speed on the outbound trip.

2201) 18 kg of mixed nuts containing 35% peanuts were mixed with 12 kg of another kind of mixed nuts that contain 45% peanuts. What percent of the new mixture is peanuts?

2202) 3 ml of a 50% saline solution was mixed with 2 ml of pure water. What is the concentration of the mixture?

2203) 15 lb of Alberto's Red Hot Peanuts was made by combining 10 lb of peanuts which cost $4/lb with 5 lb of spices which cost $1/lb. Find the cost per lb of the mixture.

2204) 2 lb of Indonesian cinnamon which costs $18/lb were combined with 4 lb of Thai cinnamon which costs $12/lb. Find the cost per lb of the mixture.

2205) Cody mixed 10 oz. of peanuts with 15 oz. of mixed nuts containing 60% peanuts. Peanuts are what percent of the new mixture?

2206) A metal alloy weighing 1 lb. and containing 90% platinum is melted and mixed with 4 lb. of a different alloy which contains 80% platinum. What percent of the resulting alloy is platinum?

2207) 4 oz. of mixed nuts containing 51% peanuts were mixed with 16 oz. of another kind of mixed nuts that contain 41% peanuts. Peanuts are what percent of the new mixture?

2208) A metal alloy weighing 6 mg and containing 83% nickel is melted and mixed with 2 mg of a different alloy which contains 79% nickel. What percent of the resulting alloy is nickel?

2209) 9 ml of a 52% sugar solution was mixed with 5 ml of a 24% sugar solution. What is the concentration of the mixture?

2210) A metal alloy weighing 6 kg and containing 56% copper is melted and mixed with 3 kg of a different alloy which contains 38% copper. What percent of the resulting alloy is copper?

2211) The indoor climbing gym is a popular field trip destination. This year the senior class at High School A and the senior class at High School B both planned trips there. The senior class at High School A rented and filled 6 vans and 13 buses with 802 students. High School B rented and filled 12 vans and 6 buses with 444 students. Each van and each bus carried the same number of students. How many students can a van carry? How many students can a bus carry?

2212) The senior classes at High School A and High School B planned separate trips to Yellowstone National Park. The senior class at High School A rented and filled 7 vans and 4 buses with 290 students. High School B rented and filled 14 vans and 10 buses with 676 students. Each van and each bus carried the same number of students. How many students can a van carry? How many students can a bus carry?

2213) The senior classes at High School A and High School B planned separate trips to the local amusement park. The senior class at High School A rented and filled 12 vans and 1 bus with 123 students. High School B rented and filled 6 vans and 5 buses with 237 students. Each van and each bus carried the same number of students. How many students can a van carry? How many students can a bus carry?

2214) A boat traveled 280 miles downstream and back. The trip downstream took 14 hours. The trip back took 28 hours. What is the speed of the boat in still water? What is the speed of the current?

2215) Yellowstone National Park is a popular field trip destination. This year the senior class at High School A and the senior class at High School B both planned trips there. The senior class at High School A rented and filled 5 vans and 1 bus with 81 students. High School B rented and filled 7 vans and 5 buses with 207 students. Each van and each bus carried the same number of students. How many students can a van carry? How many students can a bus carry?

2216) A boat traveled 480 miles downstream and back. The trip downstream took 12 hours. The trip back took 24 hours. Find the speed of the boat in still water and the speed of the current.

2217) A boat traveled 96 miles downstream and back. The trip downstream took 4 hours. The trip back took 24 hours. Find the speed of the boat in still water and the speed of the current.

2218) A plane traveled 928 miles to Tokyo and back. The trip there was with the wind. It took 8 hours. The trip back was into the wind. The trip back took 16 hours. What is the speed of the plane in still air? What is the speed of the wind?

2219) A plane traveled 312 miles to Rome and back. The trip there was with the wind. It took 3 hours. The trip back was into the wind. The trip back took 6 hours. Find the speed of the plane in still air and the speed of the wind.

2220) A plane traveled 840 miles to Bangkok and back. The trip there was with the wind. It took 7 hours. The trip back was into the wind. The trip back took 14 hours. What is the speed of the plane in still air? What is the speed of the wind?

Find each product.

2221) $(n+1)(5n-6)$

2222) $(3a-2)(3a+7)$

2223) $(7x-4)(6x-1)$

2224) $(7k+3)(k+8)$

2225) $(5x-5)(2x+8)$

2226) $(2x+5)(6x+2)$

2227) $(8m+8)(2m+1)$

2228) $(6n+3)(4n-3)$

2229) $(5x-7)(7x-8)$

2230) $(2p-4)(5p+6)$

2231) $(7n-2)^2$

2232) $(m-4)(m+4)$

2233) $(1+4r)(1-4r)$

2234) $(3n+6)(3n-6)$

2235) $(x+7)(x-7)$

2236) $(1+6b)(1-6b)$

2237) $(6v+5)(6v-5)$

2238) $(8x+3)^2$

2239) $(3x+8)^2$

2240) $(5a-4)(5a+4)$

2241) $(5k-2)(k+7)$

2242) $(3a-7)(2a-5)$

2243) $(8p-5)(7p+3)$

2244) $(2x+1)(5x+6)$

2245) $(4n-2)(4n+2)$

2246) $(8m+3)(2m-2)$

2247) $(r+4)(3r+4)$

2248) $(4x+5)(7x-3)$

2249) $(7n-7)(5n-8)$

2250) $(8b+2)(6b-6)$

2251) $(6x-7)^2$

2252) $(3r-4)^2$

2253) $(7-7n)^2$

2254) $(2a-5)(2a+5)$

2255) $(5v+1)(5v-1)$

2256) $(8x-2)^2$

2257) $(x+3)(x-3)$

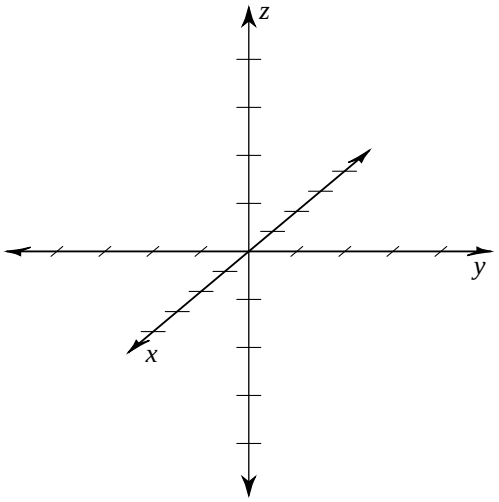
2258) $(5n+7)(5n-7)$

2259) $(5p+5)^2$

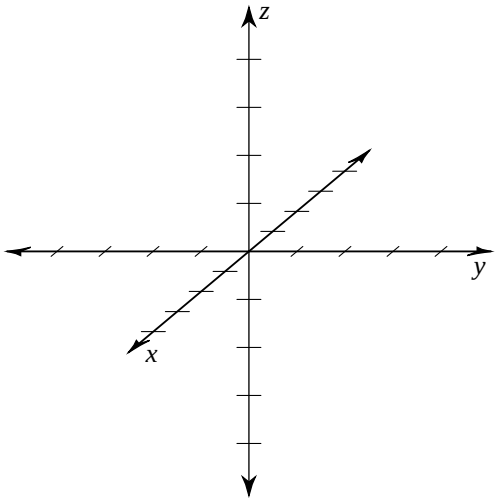
2260) $(7k+5)(7k-5)$

Sketch each plane.

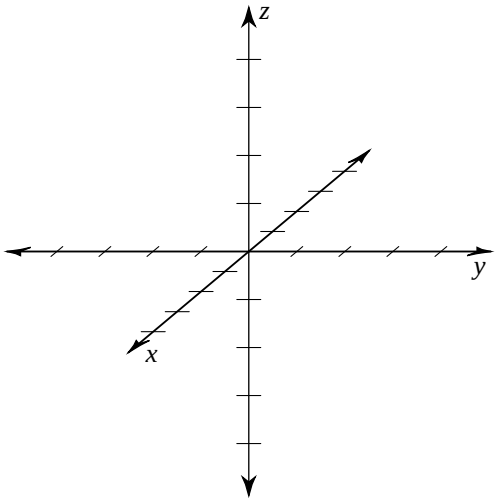
2261) $-6x+8y-8z=24$



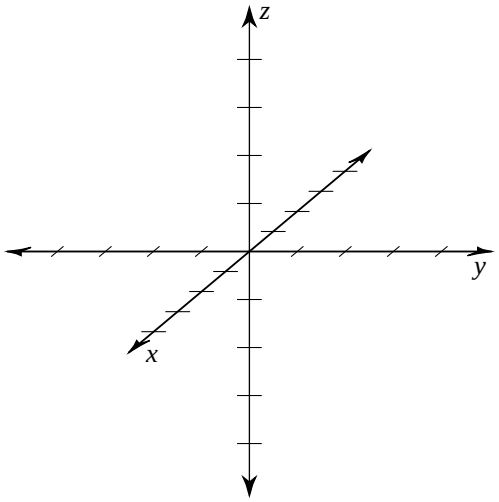
2262) $-6x-4y+3z=12$



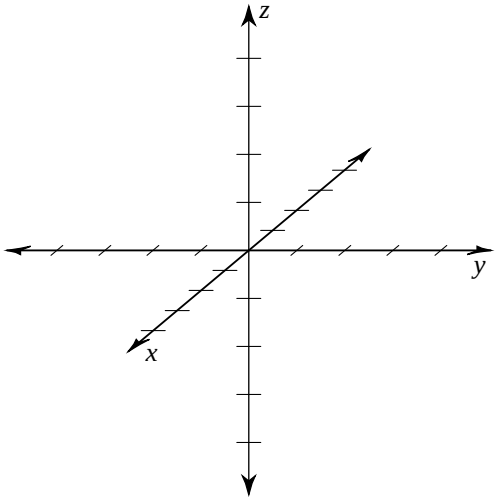
2263) $-2x - y + z = 4$



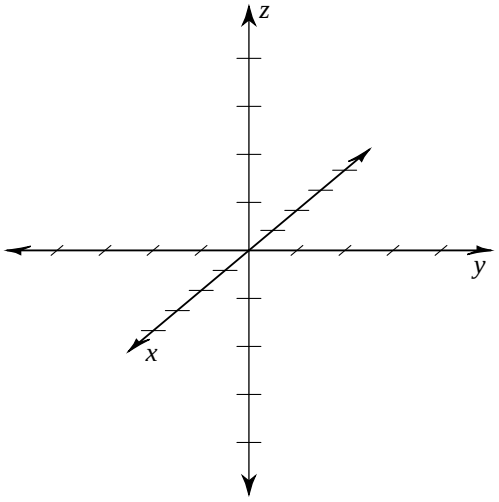
2264) $3x + 4y + 4z = 12$



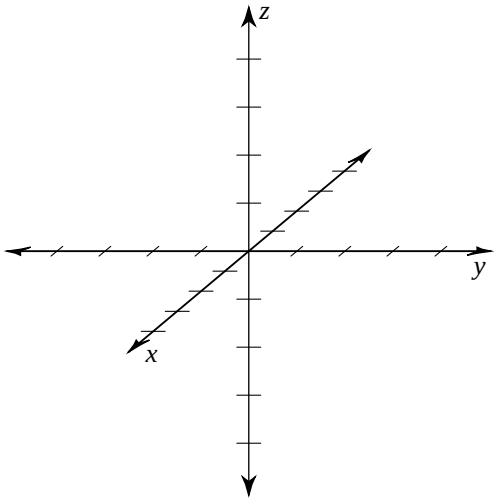
2265) $-3x - y - z = 3$



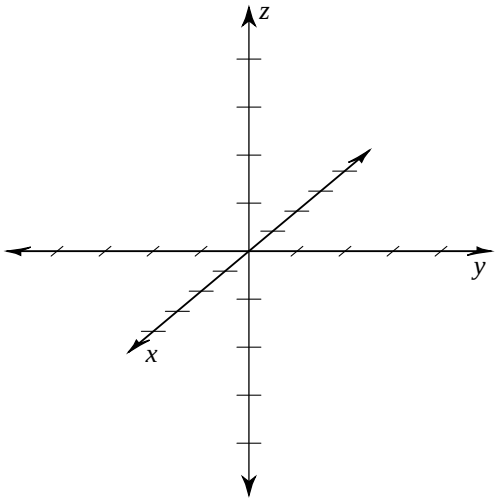
2266) $9x - 18y - 12z = -36$



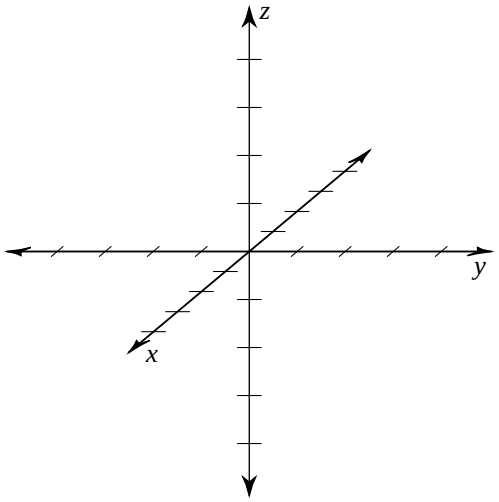
2267) $-60x + 15y + 20z = 60$



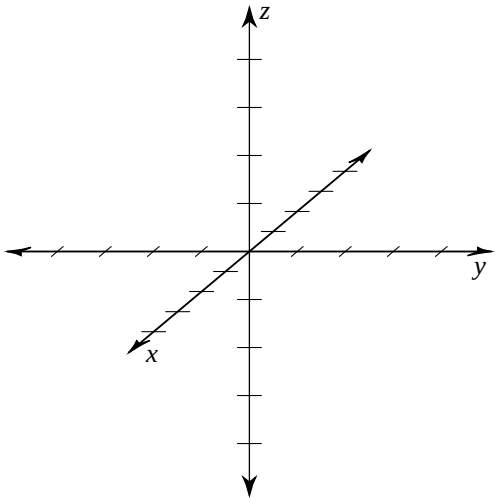
2268) $-2x + 6y + 3z = 6$



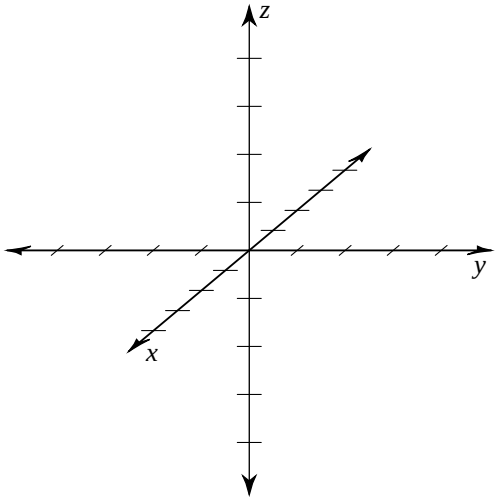
2269) $x - y + z = 2$



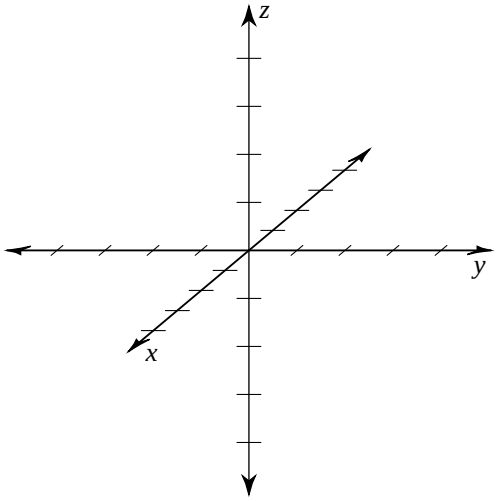
2270) $4x + 4y + 4z = 8$



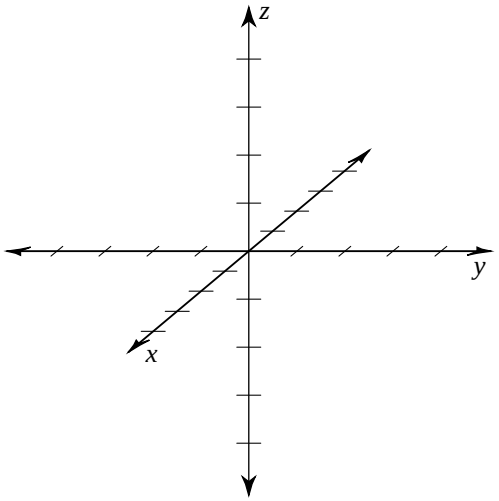
2271) $3x + 6y - 2z = 6$



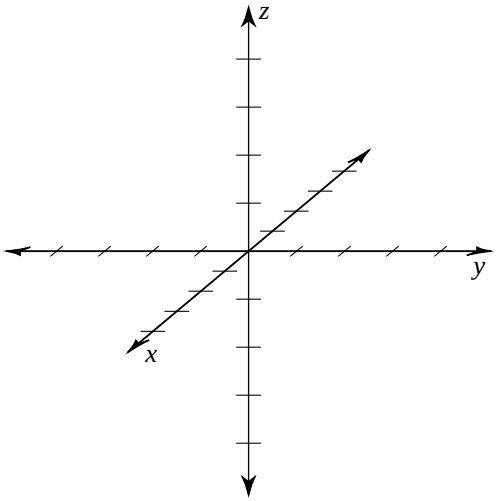
2272) $-4x - 3y - 4z = 12$



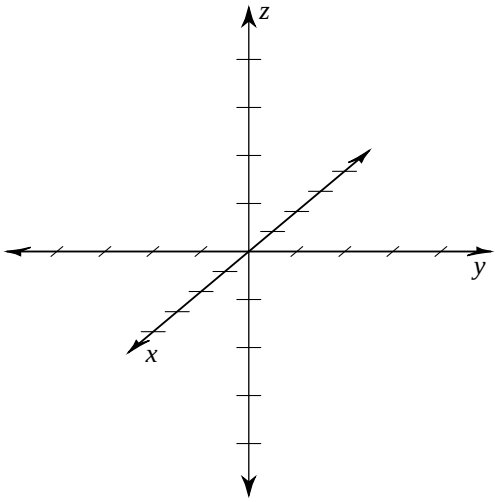
2273) $30x + 15y + 20z = -60$



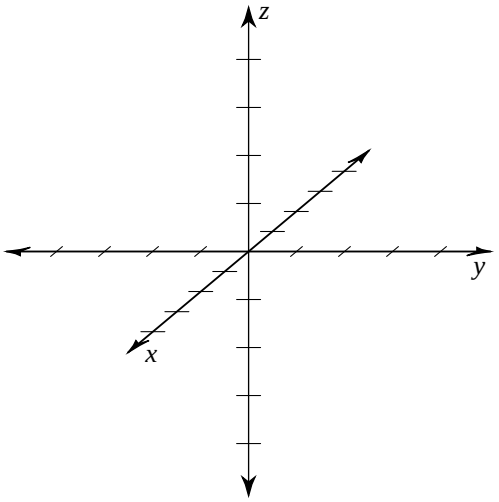
2274) $-20x + 15y - 15z = -60$



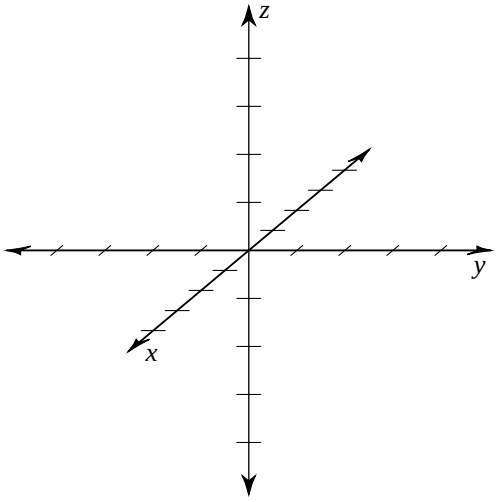
2275) $-8x + 6y - 6z = 24$



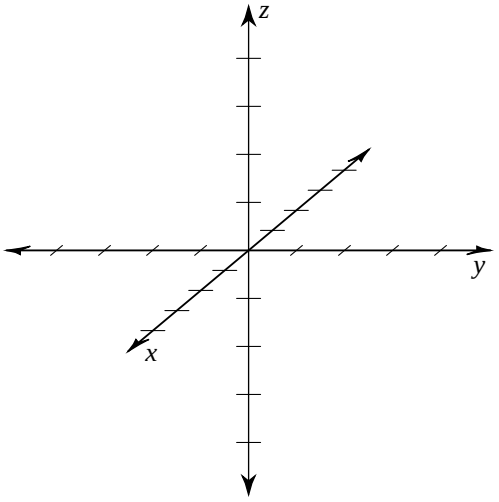
2276) $-12x + 4y + 3z = -12$



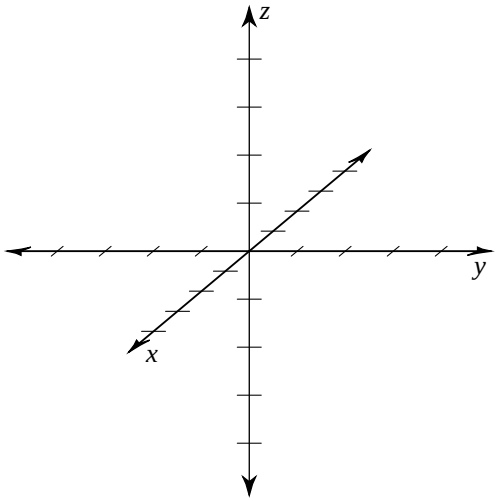
2277) $-3x - 12y - 4z = 12$



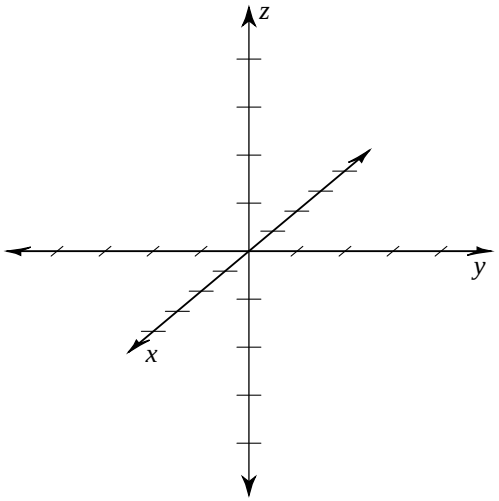
2278) $-30x + 15y + 10z = -30$



2279) $12x - 3y + 4z = 12$

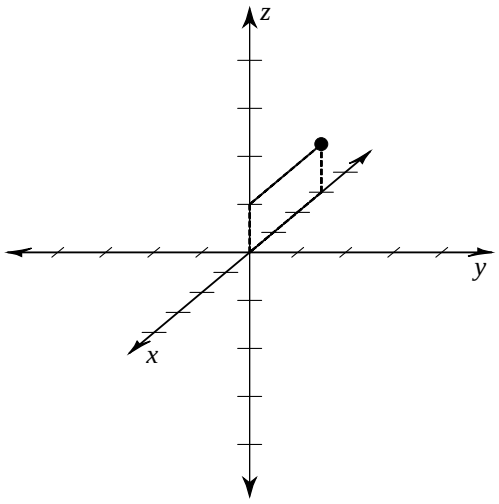


2280) $-3x - 12y + 4z = 12$

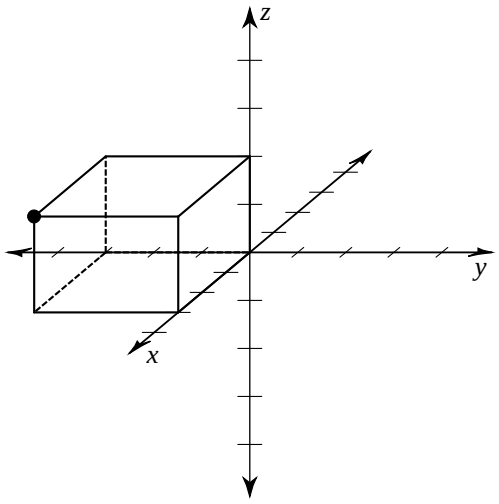


Write the coordinates of each point.

2281)



2282)



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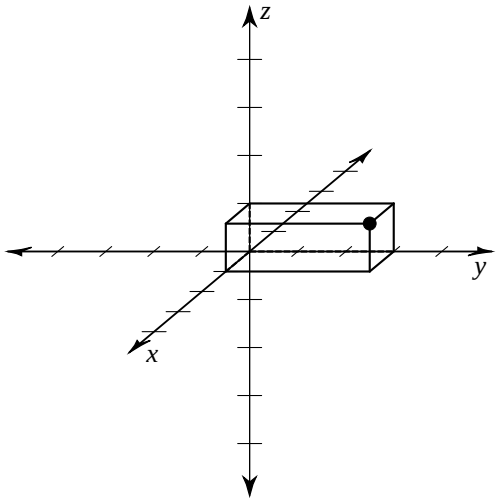

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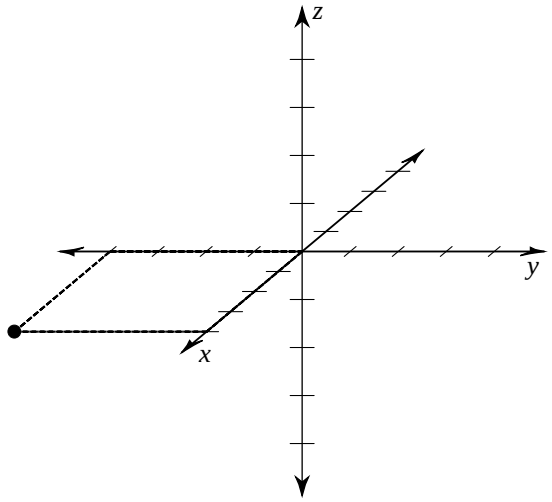

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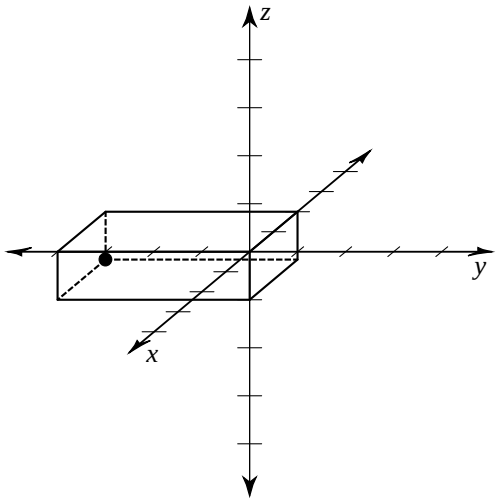

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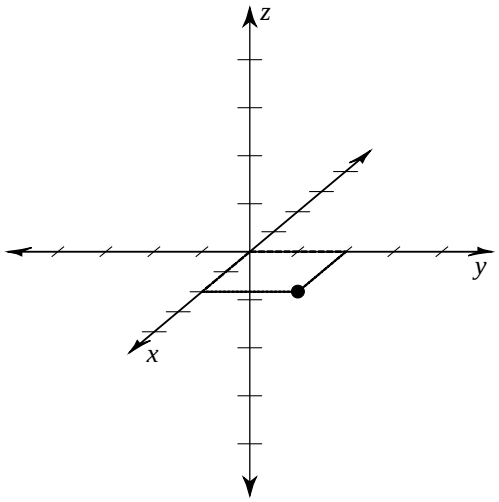

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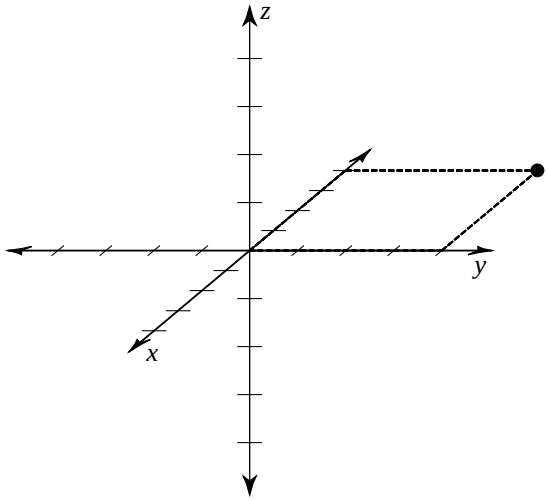

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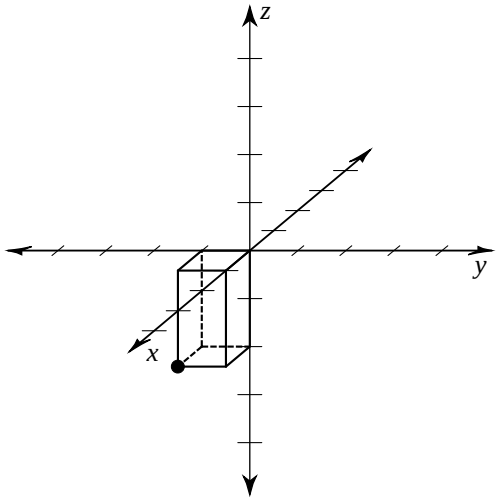

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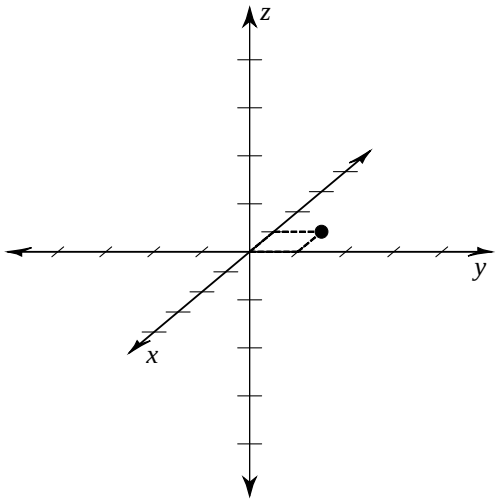

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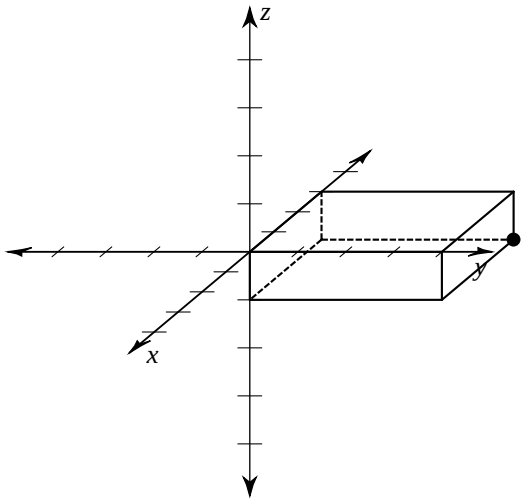

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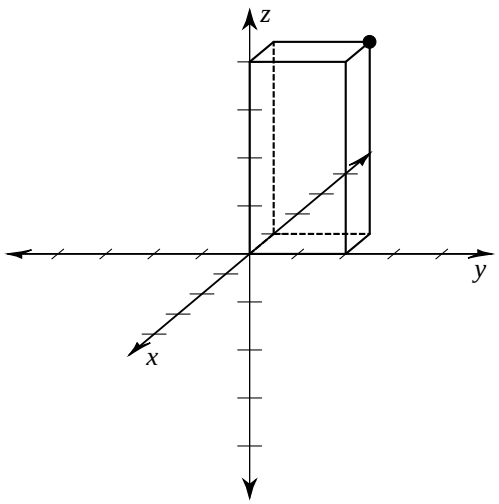

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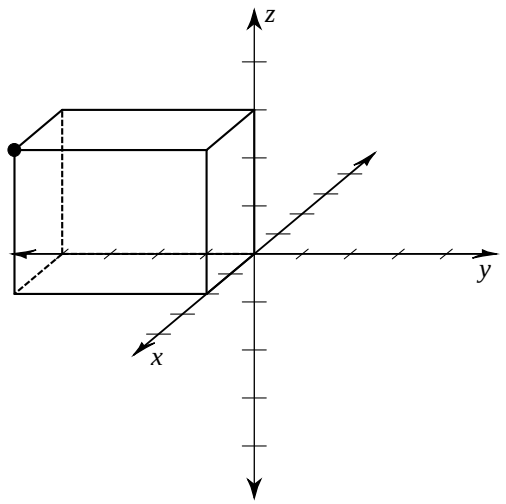

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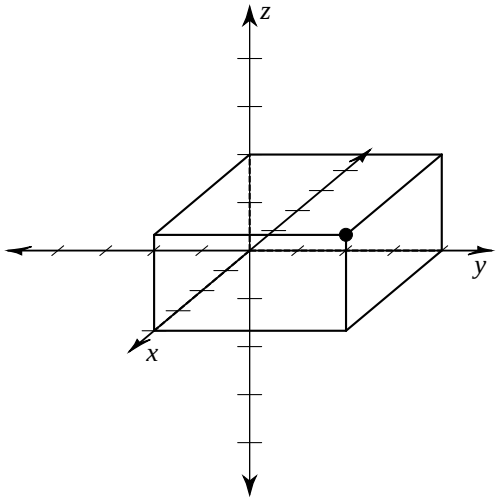

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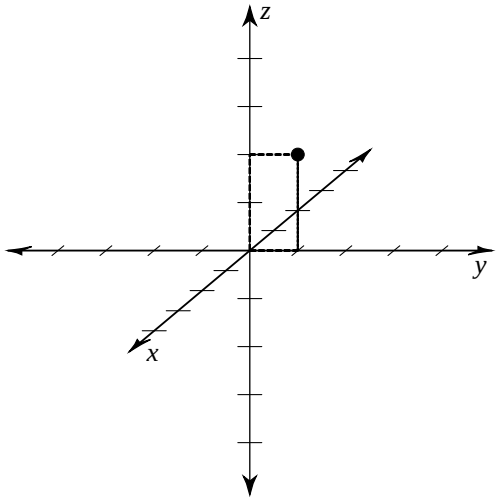

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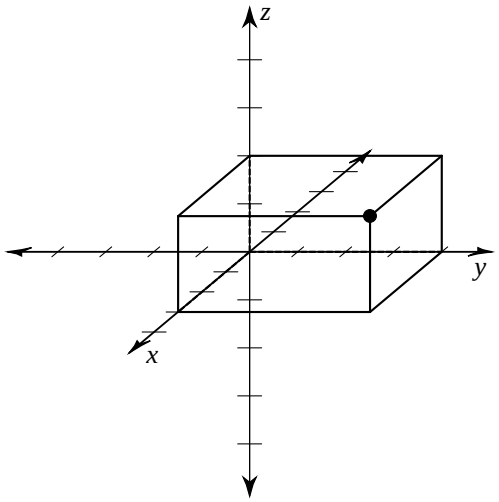

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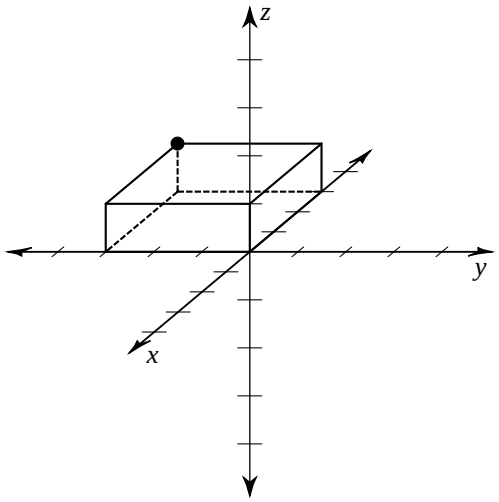

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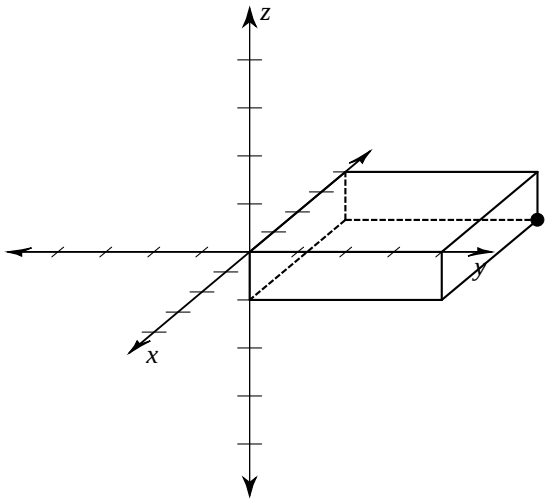

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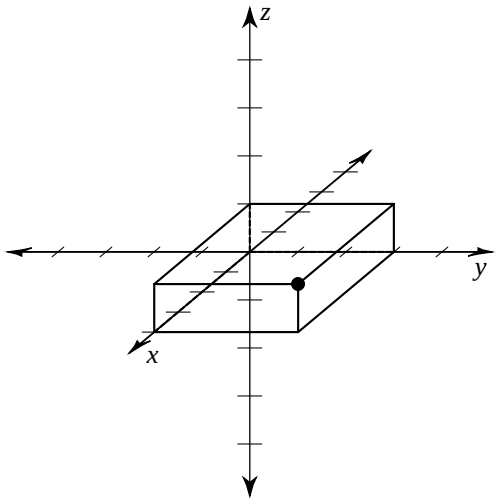

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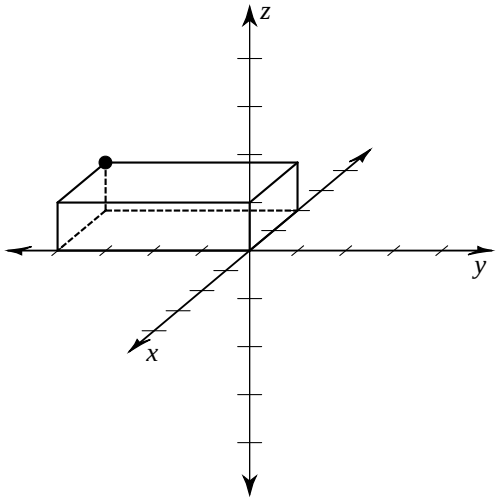

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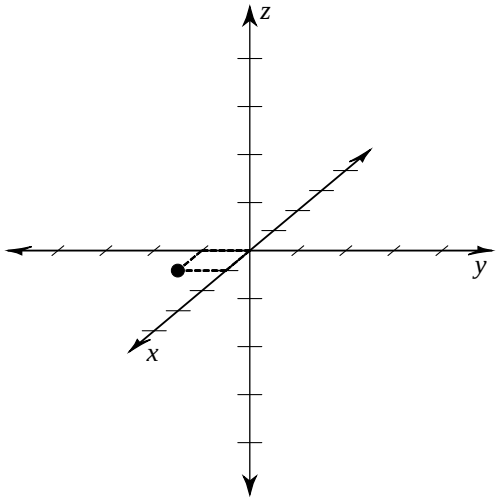


Write a polynomial function of least degree with integral coefficients that has the given zeros.

2301) $3i,\ \ 3 - i$

2302) $3 - 3i,\ \ 3 + 3i,\ \ -2i$

2303) $\sqrt{10},\ \ -\sqrt{10},\ \ \sqrt{7},\ \ -\sqrt{7}$

2304) $\sqrt{10}$ mult. 2

2305) $3i$ mult. 2, $\ -3i$

2306) $3 + i$ mult. 2, $\ 3 - i$ mult. 2

2307) $-1 + i,\ \ 3 + \sqrt{10},\ \ 3 - \sqrt{10}$

2308) $-2 + i,\ \ -1 - 2i$

2309) $2 + \sqrt{2},\ \ -2 - i$

2310) $\sqrt{7},\ \ i,\ \ -i$

2311) $2,\ \ 4,\ \ -4$

2312) $-2,\ \ 0,\ \ -4$

2313) $-5,\ \ -3,\ \ -4$

2314) $-4,\ \ 1 + 2\sqrt{2},\ \ 2 - i$

2315) $-3,\ \ 2i$

2316) $1,\ \ -5,\ \ 3$

2317) $3 + 3i,\ \ 3 - 3i,\ \ 3i$

2318) $-4,\ \ 1,\ \ -5,\ \ -3$

2319) $2 + \sqrt{3},\ \ -1 + \sqrt{2}$

2320) $-1 + \sqrt{6},\ \ -3i$

Describe the end behavior of each function.

2321) $f(x) = x^4 - 2x^2 - 1$

2322) $f(x) = x^4 - x^2 + x + 2$

2323) $f(x) = -x^3 + 15x^2 - 72x + 113$

2324) $f(x) = x^2 + 4x - 2$

2325) $f(x) = -x^5 + 4x^3 - 5x - 1$

2326) $f(x) = x^5 - 3x^3 + 3x + 2$

2327) $f(x) = -x^3 + 3x^2 - 3$

2328) $f(x) = -x^4 + 2x^3 + 1 - 6x + 2x^2$

2329) $f(x) = x^3 - x^2 - 5x + 3$

2330) $f(x) = -x^2 + 8x - 15$

Evaluate each function at the given value.

2331) $f(x) = x^4 - 4x^3 - 10x^2 + 21x + 18$ at $x = 5$

2332) $f(x) = -x^4 - x^3 + 33x^2 + 14x - 25$ at $x = -6$

2333) $f(m) = m^4 - m^3 - 27m^2 - 16m - 6$ at $m = 6$

2334) $f(x) = -5x^3 + 23x^2 - 11x - 3$ at $x = 4$

2335) $f(m) = 3m^3 - 6m^2 - 27m + 23$ at $m = 4$

2336) $f(a) = 4a^3 - 9a^2 + 8$ at $a = 2$

2337) $f(m) = m^4 + 9m^3 + 19m^2 - 2m$ at $m = -4$

2338) $f(a) = a^3 - 6a^2 - a + 38$ at $a = 5$

2339) $f(a) = 4a^4 + 21a^3 - 18a^2 + a + 7$ at $a = -6$

2340) $f(n) = -5n^3 - 23n^2 + 12n + 21$ at $n = -5$

2341) $f(x) = x^3 + 2x^2 - 17x - 13$ at $x = -5$

2342) $f(x) = x^4 + x^3 - 35x^2 + 22x + 3$ at $x = 5$

2343) $f(x) = -4x^4 - 17x^3 + 14x^2 - x + 18$ at $x = -5$

2344) $f(x) = -3x^4 + 12x^3 + 41x^2 - 30x$ at $x = 6$

2345) $f(x) = x^3 - 8x^2 + 17x + 6$ at $x = 3$

2346) $f(m) = m^4 + 6m^3 + 9m^2 + 2m$ at $m = -2$

2347) $f(m) = m^3 - 10m^2 + 22m$ at $m = 4$

2348) $f(a) = -2a^4 - 10a^3 - 13a^2 - 21a - 13$ at $a = -4$

2349) $f(a) = -5a^3 - 3a^2 + 2a + 9$ at $a = -1$

2350) $f(a) = a^3 + 2a^2 - 18a + 38$ at $a = -6$

2351) $f(x) = x^3 + 12x^2 + 33x - 21$ at $x = -6$

2352) $f(x) = -2x^4 - 13x^3 + 40x + 20$ at $x = -6$

2353) $f(x) = x^3 - 5x^2 - 4x + 10$ at $x = 5$

2354) $f(m) = 5m^4 - 31m^3 + 33m^2 - 15m + 5$ at $m = 5$

2355) $f(a) = a^4 + 10a^3 + 21a^2 - 24a - 9$ at $a = -5$

2356) $f(m) = -2m^3 - 13m^2 - 10m + 18$ at $m = -5$

2357) $f(a) = a^4 + 2a^3 + 4a^2 + 6a - 15$ at $a = -2$

2358) $f(a) = a^4 + 2a^3 - 2a^2 + 23a - 9$ at $a = -4$

2359) $f(n) = -5n^3 - 16n^2 - 3n - 7$ at $n = -3$

2360) $f(a) = a^3 - 7a^2 + 12a - 30$ at $a = 6$

Find all zeros.

2361) $f(x) = 3x^4 - 2x^2 - 21$

2362) $f(x) = 5x^4 - 44x^2 + 63$

2363) $f(x) = 5x^4 - 13x^2 - 28$

2364) $f(x) = 3x^3 - 7x^2 + 3x + 6$

2365) $f(x) = 3x^4 + 19x^2 - 14$

2366) $f(x) = 5x^4 - 14x^2 - 3$

2367) $f(x) = 2x^5 + 21x^3 + 40x$

2368) $f(x) = x^4 - 5x^3 + 17x^2 - 33x$

2369) $f(x) = 3x^5 + x^4 - 12x^3 + 36x^2$

2370) $f(x) = 2x^5 + 15x^3 + 25x$

2371) $f(x) = 15x^5 + 9x^4 - 125x^3 - 75x^2 + 210x + 126$

2372) $f(x) = 10x^5 + 2x^4 - 55x^3 - 11x^2 - 200x - 40$

2373) $f(x) = 15x^5 - 5x^4 + 54x^3 - 18x^2 + 48x - 16$

2374) $f(x) = 3x^4 - 20x^2 - 32$

2375) $f(x) = 2x^4 + 17x^2 + 36$

2376) $f(x) = 3x^4 + 23x^2 + 30$

2377) $f(x) = 5x^3 + 6x^2 + x$

2378) $f(x) = 2x^3 + x^2 - 6x$

2379) $f(x) = 3x^5 - 7x^3 + 4x$

2380) $f(x) = 5x^5 - 42x^3 + 49x$

Name each polynomial by degree and number of terms.

2381) $6x^5 - 5x^4 - 7x^2$

2382) $-7n^2 + 8n$

2383) $-8n^2$

2384) $-3k^5 - k^3 + 3k^2 - 10$

2385) $-6x + 7$

2386) $2n^5$

2387) $2b$

2388) $3b^4 + 6$

2389) -6

2390) $-9a^4 - 10$

State the possible rational zeros for each function. Then find all rational zeros.

2391) $f(x) = 5x^3 - 19x^2 - 29x - 5$

2392) $f(x) = x^3 - 7x^2 - 24x + 18$

2393) $f(x) = x^3 + 5x^2 - 35x + 33$

2394) $f(x) = 2x^3 + 5x^2 + x - 2$

2395) $f(x) = 2x^3 + 19x^2 + 15x - 50$

2396) $f(x) = 4x^3 + x^2 - 4x - 1$

2397) $f(x) = x^3 - x^2 + 4x + 20$

2398) $f(x) = 3x^3 + 7x^2 - 7x - 3$

2399) $f(x) = 2x^3 + 8x^2 - x - 18$

2400) $f(x) = 2x^3 + 12x^2 + 7x - 18$

2401) $f(x) = 2x^3 + 5x^2 + x - 2$

2402) $f(x) = 3x^3 + 4x^2 - 18x + 5$

2403) $f(x) = 3x^3 - 13x^2 + 13x - 3$

2404) $f(x) = 2x^3 + 2x^2 - 23x - 33$

2405) $f(x) = 2x^3 + 19x^2 + 17x + 4$

2406) $f(x) = x^3 + 5x^2 + 7x + 3$

2407) $f(x) = 3x^3 - 5x^2 + x + 1$

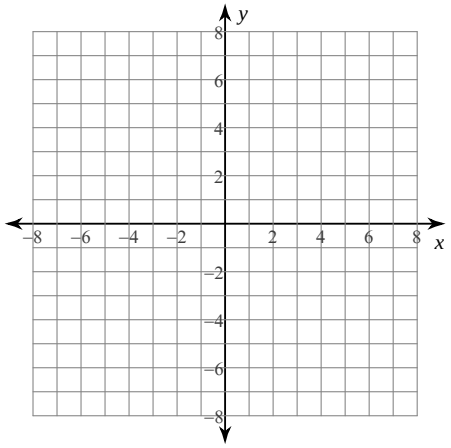
2408) $f(x) = 4x^3 + 4x^2 - x - 1$

2409) $f(x) = 6x^3 - 23x^2 + 12x - 1$

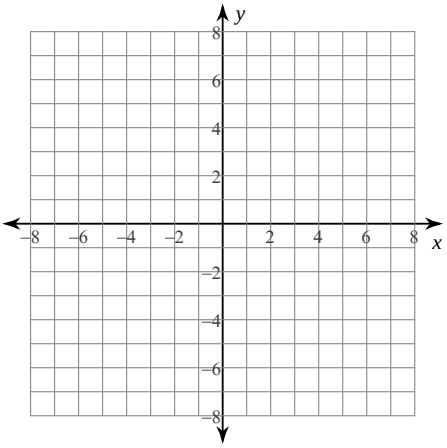
2410) $f(x) = 2x^3 - 13x^2 + 4x + 1$

Sketch the graph of each function. Approximate the relative minima and relative maxima to the nearest tenth.

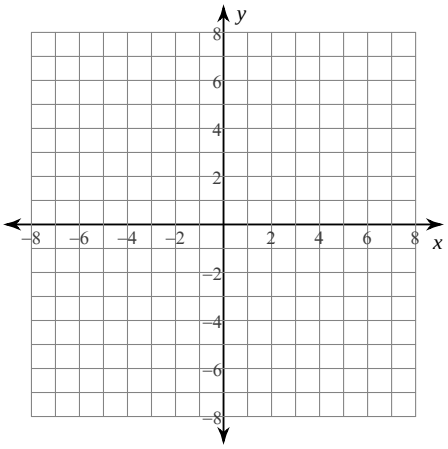
2411) $f(x) = x^4 - 2x^2 + 4$



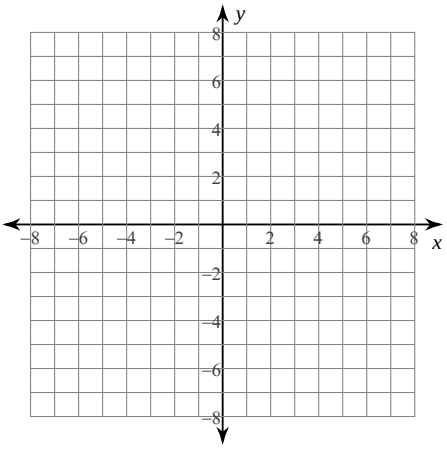
2412) $f(x) = -x^4 + x^2 + x - 2$



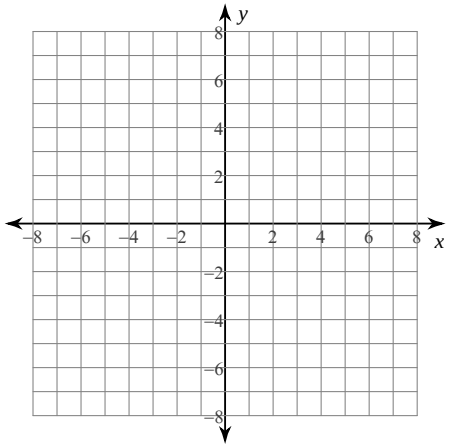
2413) $f(x) = -x^4 - 6x^3 - 11x^2 - 8x - 4$



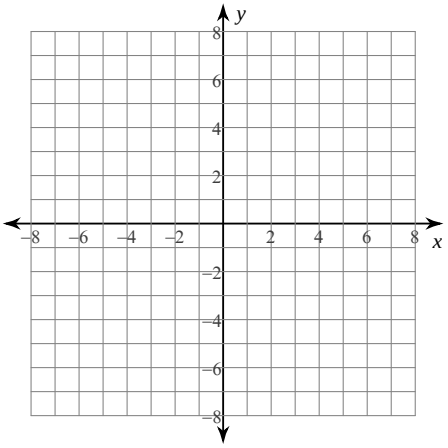
2414) $f(x) = -x^4 + 4x^2 + 2x - 5$



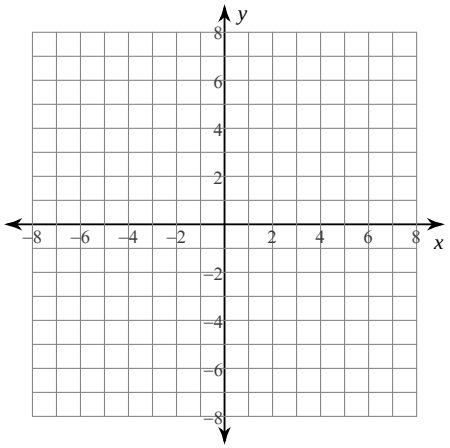
2415) $f(x) = x^3 - 4x^2 + 2$



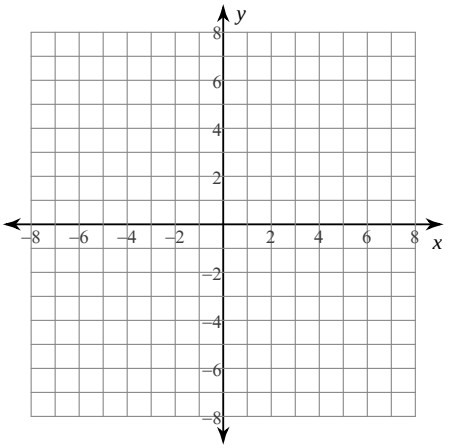
2416) $f(x) = x^3 - 14x^2 + 64x - 96$



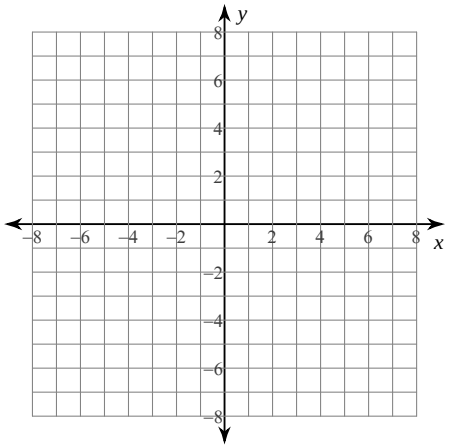
2417) $f(x) = -x^3 - 8x^2 - 21x - 18$



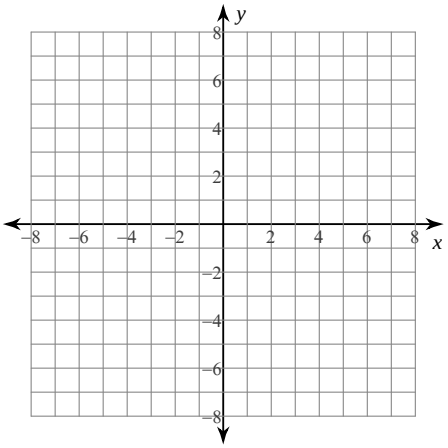
2418) $f(x) = x^4 - x^3 - 4x^2 + 2$



2419) $f(x) = -x^4 + 2x^2 + 2x - 1$



2420) $f(x) = x^3 - x^2 - 3$



Sketch the general shape of each function.

2421) $f(x) = -x^3 + 13x^2 - 56x + 84$

2422) $f(x) = x^2 - 6x + 11$

2423) $f(x) = x^5 - 2x^3 - 1$

2424) $f(x) = -x^5 + 4x^3 - 2x - 2$

2425) $f(x) = -x^3 + 2x^2 - 4$

2426) $f(x) = -x^4 + 4x^2 + 2x - 3$

2427) $f(x) = x^2 - 6x + 7$

2428) $f(x) = -x^2 + 1$

2429) $f(x) = x^4 - x^2 - 1$

2430) $f(x) = -x^5 + 4x^3 - 3x + 4$

Write each expression in exponential form.

2431) $\sqrt[6]{10n}$

2432) $\left(\sqrt[3]{6x}\right)^2$

2433) $\left(\sqrt[5]{2b}\right)^6$

2434) $\left(\sqrt{5x}\right)^5$

2435) $\left(\sqrt{v}\right)^5$

2436) $\sqrt{7a}$

2437) $\left(\sqrt{2k}\right)^3$

2438) $\left(\sqrt{7x}\right)^5$

2439) $\left(\sqrt[3]{6n}\right)^4$

2440) $\left(\sqrt[4]{5b}\right)^5$

Write each expression in radical form.

2441) $a^{\frac{2}{5}}$

2442) $(5n)^{\frac{3}{2}}$

2443) $(4x^2)^{\frac{1}{3}}$

2444) $(5k)^{\frac{4}{3}}$

2445) $x^{\frac{7}{4}}$

2446) $(3n)^{\frac{1}{2}}$

2447) $(3m)^{\frac{7}{5}}$

2448) $(3p)^{\frac{1}{5}}$

2449) $n^{\frac{1}{3}}$

2450) $(3x)^{\frac{3}{4}}$

Simplify. Your answer should contain only positive exponents with no fractional exponents in the denominator.

2451) $2yx^2 \cdot 2x^2$

2452) $a^{-1}b^2 \cdot a^2b^2 \cdot 4a^{\frac{3}{2}}$

2453) $2x^{\frac{3}{4}}y^{\frac{2}{3}} \cdot 3x^{\frac{5}{3}}y^{-\frac{3}{2}}$

2454) $m^{-2} \cdot 3nm^{-4}$

2455) $2xy^{-\frac{3}{2}} \cdot 3x^{-\frac{4}{3}}$

2456) $4xy^{\frac{1}{2}} \cdot 2y^{-2} \cdot 4x^{-\frac{3}{2}} y^{\frac{1}{2}}$

2457) $m^{\frac{3}{4}} n^{-2} \cdot 3nm^{\frac{4}{3}}$

2458) $x^{\frac{1}{3}} y^{\frac{3}{4}} \cdot 3x^{\frac{2}{3}}$

2459) $2x^{\frac{1}{2}} y^{-1} \cdot 4x^{\frac{1}{3}} y^{-2}$

2460) $4x^{\frac{1}{3}} y^{-\frac{5}{3}} \cdot 4x^2 y^{-\frac{3}{2}}$

Simplify each and state the excluded values.

2461) $\frac{3a + 24}{a + 8}$

2462) $\frac{6 - n}{5n - 30}$

2463) $\frac{6k}{6k^2 - 6k}$

2464) $\frac{x - 1}{x^2 - 3x + 2}$

2465) $\frac{x^2 - 5x - 14}{x - 7}$

2466) $\frac{n^2 + 5n - 6}{1 - n}$

2467) $\frac{25m + 25}{40}$

2468) $\frac{18p^2 + 30p}{12p^3}$

2469) $\frac{2x - 18}{x - 9}$

2470) $\frac{14n}{49n^2 - 63n}$

2471) $\frac{63a^2}{21a^2 + 70a}$

2472) $\frac{3 - n}{10n - 30}$

2473) $\frac{k - 4}{4k^2 - 16k}$

2474) $\frac{6x + 24}{27}$

2475) $\frac{24}{15x + 24}$

2476) $\frac{n + 2}{n^2 - 7n - 18}$

2477) $\dfrac{35m - 45}{10}$

2478) $\dfrac{10p + 10}{p + 1}$

2479) $\dfrac{48x^2}{12x^2 - 18x}$

2480) $\dfrac{n + 1}{4n + 4}$

Find the next three terms in each sequence.

2481) $-8,\ -6,\ -3,\ 1,\ 6,\ ...$

2482) $1,\ 9,\ 25,\ 49,\ 81,\ ...$

2483) $4,\ 16,\ 36,\ 64,\ 100,\ ...$

2484) $-30,\ -14,\ -6,\ -2,\ 0,\ ...$

2485) $\dfrac{3}{2},\ \dfrac{5}{4},\ \dfrac{7}{8},\ \dfrac{9}{16},\ \dfrac{11}{32},\ ...$

2486) $4,\ 24,\ 124,\ 624,\ 3124,\ ...$

2487) $-2,\ -4,\ -12,\ -48,\ -240,\ ...$

2488) $4,\ 3,\ \dfrac{12}{5},\ 2,\ \dfrac{12}{7},\ ...$

2489) $\dfrac{15}{2},\ 5,\ \dfrac{15}{4},\ 3,\ \dfrac{5}{2},\ ...$

2490) $26,\ 14,\ 8,\ 5,\ \dfrac{7}{2},\ ...$

Evaluate each series.

2491) $\sum_{m=1}^{6} m$

2492) $\sum_{m=1}^{6} m(m + 2)$

2493) $\sum_{a=1}^{6} (3a^2 - 4)$

2494) $\sum_{k=1}^{5} (30 - k)$

2495) $\sum_{n=1}^{6} (20 - n^2)$

2496) $\sum_{a=1}^{5} a$

2497) $\sum_{a=1}^{5} (500 - a)$

2498) $\sum_{m=1}^{7} m$

2499) $\sum_{n=1}^{5} n(n + 1)$

2500) $\sum_{k=1}^{7} (400 - k^2)$

Solve each system by elimination.

2501) $-2x - 5y + 4z = 1$
$-4x - 3y - z = -1$
$2x - 2y + 6z = 0$

2502) $-4x - 3y + z = 2$
$-3x - 5y + 2z = -9$
$3x + 4y = -1$

2503) $-4r + 3s - 4t = -18$
$-3r - 3s + 3t = 24$
$r - 6s - 6t = 29$

2504) $-3a + 4b - 4c = -14$
$4a - b + 6c = -7$
$-2a - 4b - 2c = 20$

2505) $6x - 5y - z = -5$
$2x + 4y + 6z = 30$
$5y + 4z = 20$

2506) $5x - 2y - 5z = -26$
$-4x + 2y - 4z = -4$
$-3x + y - 6z = -11$

2507) $4r + s - 3t = -6$
$-6r + 6s + 5t = -6$
$-6r - s + 4t = 8$

2508) $6a - 5b + 4c = 8$
$2a - 6b - 2c = 10$
$-4a + b - 4c = 0$

2509) $a - 2b + 5c = 6$
$a + b - 5c = -12$
$5a - 2b - 2c = -19$

2510) $-2x - 5y - 3z = -20$
$-3x - 6y - 6z = -18$
$x + y + 3z = -2$

2511) $6x - 2y = 2$
$-4x + 10y = 16$

2512) $6x - 9y = -21$
$-3x - 6y = -21$

2513) $-11x + 11y = -11$
$x - y = 1$

2514) $x + 9y = -6$
$-2x - 18y = 12$

2515) $-5x + 3y = -7$
$10x - 6y = 10$

2516) $9x + 4y = 15$
$27x + 12y = 6$

2517) $12x - 28y = -20$
$-3x + 7y = 1$

2518) $16x - 9y = -19$
$-8x + 3y = 17$

2519) $4x + 2y = 14$
$-8x - 6y = -30$

2520) $5x + 2y = 3$
$15x + 5y = 5$

Solve each system by substitution.

2521) $-3x - y = -17$
$-8x + y = -16$

2522) $-4x - y = -13$
$4x + y = 13$

2523) $6x - 6y = 12$
$4x + y = -17$

2524) $-3x - 3y = -18$
$8x + y = -8$

2525) $2x + y = 5$
$-8x + 7y = -9$

2526) $-4x + 5y = 6$
$8x + y = 10$

2527) $-5x + y = -17$
$-5x - 8y = 1$

2528) $-x + 4y = 22$
$x + 3y = 13$

2529) $x - y = 5$
$3x + 6y = -21$

2530) $x + 2y = -6$
$2x + 4y = -1$

Use the angle sum or difference identity to find the exact value of each.

2531) cos 255°

2532) cos 75°

2533) cos 75°

2534) cos −15°

2535) cos 15°

2536) cos 285°

2537) sin 195°

2538) sin 75°

2539) sin −75°

2540) sin 15°

Use a double-angle or half-angle identity to find the exact value of each expression.

2541) $\cos\theta = \frac{4}{5}$ and $270° < \theta < 360°$
Find $\sin\frac{\theta}{2}$

2542) $\cos\theta = \frac{\sqrt{2}}{2}$ and $270° < \theta < 360°$
Find $\cos 2\theta$

2543) $\cos\theta = -\frac{\sqrt{10}}{10}$ and $90° < \theta < 180°$
Find $\cos\frac{\theta}{2}$

2544) $\cos\theta = -\frac{24}{25}$ and $90° < \theta < 180°$
Find $\tan 2\theta$

2545) $\cos\theta = -\frac{12}{13}$ and $90° < \theta < 180°$
Find $\tan 2\theta$

2546) $\cos\theta = -\frac{\sqrt{55}}{10}$ and $180° < \theta < 270°$
Find $\sin\frac{\theta}{2}$

2547) $\cos\theta = -\frac{3\sqrt{33}}{19}$ and $90° < \theta < 180°$
Find $\cos 2\theta$

2548) $\cos\theta = \frac{4}{5}$ and $0° < \theta < 90°$
Find $\tan 2\theta$

2549) $\cos\theta = \frac{15}{17}$ and $0° < \theta < 90°$

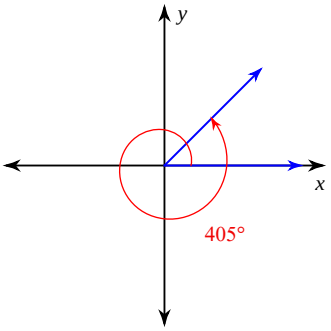
Find $\sin\frac{\theta}{2}$

2550) $\cos\theta = \frac{\sqrt{6}}{3}$ and $270° < \theta < 360°$

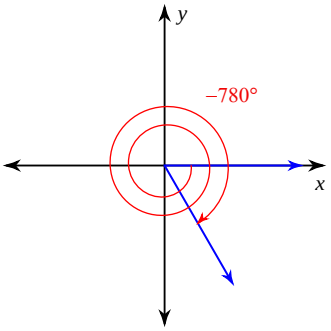
Find $\tan\frac{\theta}{2}$

Find the exact value of each trigonometric function.

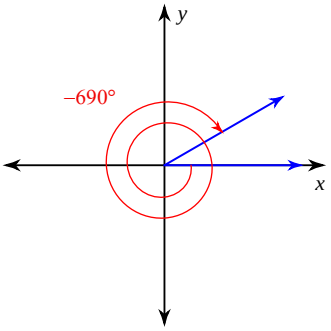
2551) $\cot\theta$



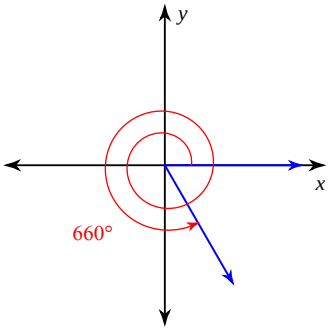
2552) $\tan\theta$



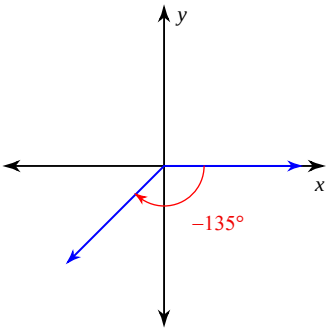
2553) $\cot\theta$



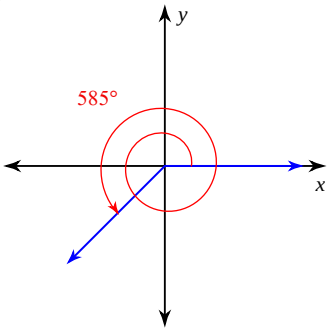
2554) $\sin\theta$



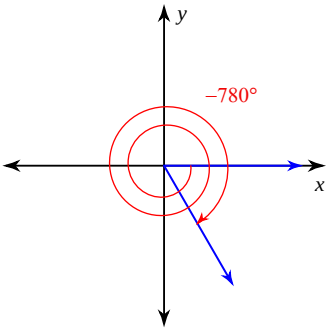
2555) $\csc\theta$



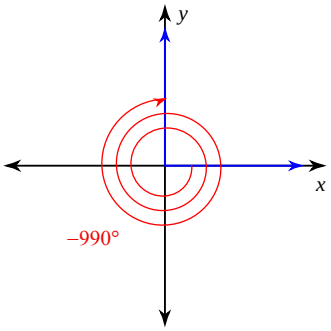
2556) $\sin\theta$



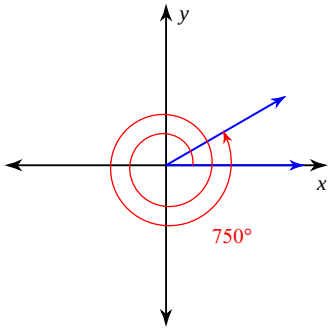
2557) $\csc\theta$



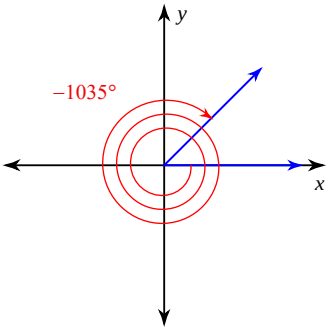
2558) $\cos\theta$



2559) sec θ

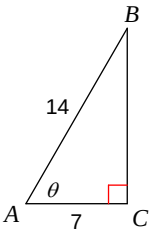


2560) sec θ

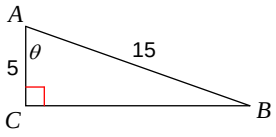


Find the measure of each angle indicated. Round to the nearest tenth.

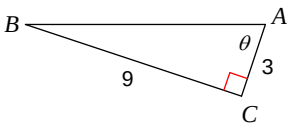
2561)



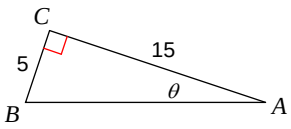
2562)



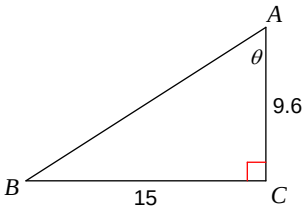
2563)



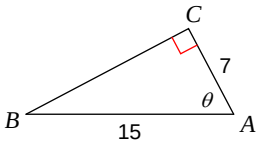
2564)



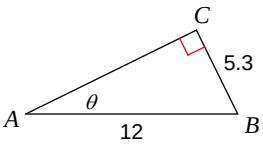
2565)



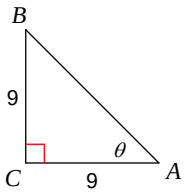
2566)



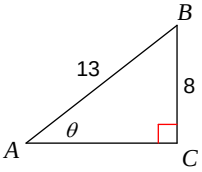
2567)



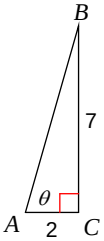
2568)



2569)

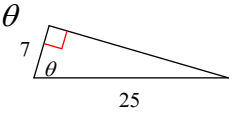


2570)

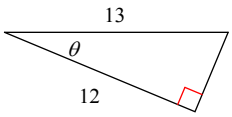


Find the value of the trig function indicated.

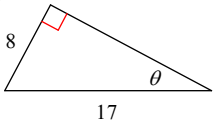
2571) cot θ



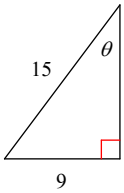
2572) sin θ



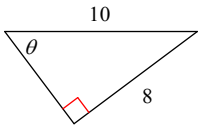
2573) csc θ



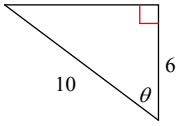
2574) sin θ



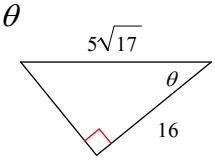
2575) csc θ



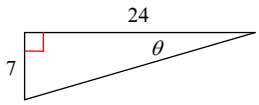
2576) cos θ



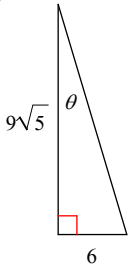
2577) sec θ



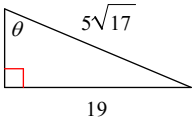
2578) sec θ



2579) cot θ

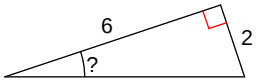


2580) cos θ

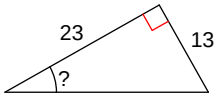


Find the measure of the indicated angle to the nearest degree.

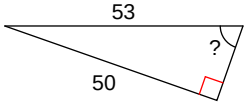
2581)



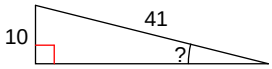
2582)



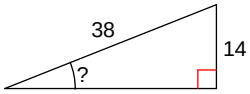
2583)



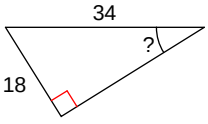
2584)



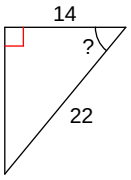
2585)



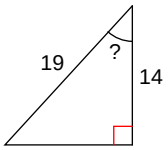
2586)



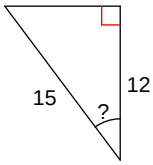
2587)



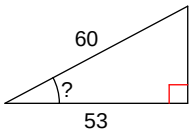
2588)



2589)



2590)



Solve each question. Round your answer to the nearest hundredth.

2591) Working alone, Wilbur can harvest a field in 16 hours. Heather can harvest the same field in 8 hours. Find how long it would take them if they worked together.

2592) Working alone, Elisa can paint a fence in ten hours. Ted can paint the same fence in nine hours. If they worked together how long would it take them?

2593) Working alone, Matt can clean an attic in 14 hours. Chelsea can clean the same attic in 15 hours. How long would it take them if they worked together?

2594) Working alone, it takes Jasmine 11 minutes to sweep a porch. Jenny can sweep the same porch in 15 minutes. Find how long it would take them if they worked together.

2595) Working alone, Ashley can tar a roof in 16 hours. Kim can tar the same roof in 14 hours. If they worked together how long would it take them?

2596) It takes Stefan ten minutes to sweep a porch. Mary can sweep the same porch in eight minutes. How long would it take them if they worked together?

2597) Mike can sweep a porch in 14 minutes. Cody can sweep the same porch in 13 minutes. If they worked together how long would it take them?

2598) Working alone, Mei can mop a warehouse in 9 hours. Molly can mop the same warehouse in 12 hours. If they worked together how long would it take them?

2599) It takes Cody ten minutes to sweep a porch. Jacob can sweep the same porch in 15 minutes. If they worked together how long would it take them?

2600) Working alone, it takes Darryl ten hours to mop a warehouse. Julia can mop the same warehouse in 11 hours. How long would it take them if they worked together?

Approximate the real zeros of each function to the nearest tenth.

2601) $f(x) = x^3 - 4x^2 + 2$

2602) $f(x) = x^3 - 9x^2 + 24x - 19$

2603) $f(x) = -x^4 + x^2 - x + 2$

2604) $f(x) = x^4 + 4x^3 + 4x^2 + 2 - x$

2605) $f(x) = x^3 + 10x^2 + 32x + 33$

2606) $f(x) = -x^4 + x^2 - x - 2$

2607) $f(x) = -x^4 + 3x^2 + 3x + 1$

2608) $f(x) = -x^4 + 2x^2 + 2x$

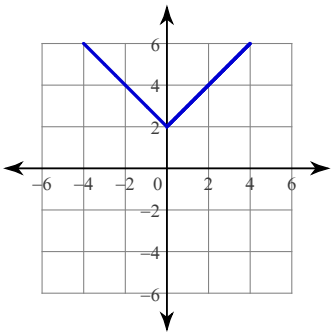
2609) $f(x) = x^3 - 3x^2 - 3$

2610) $f(x) = x^4 - 4x^3 + 4x^2 + 3$

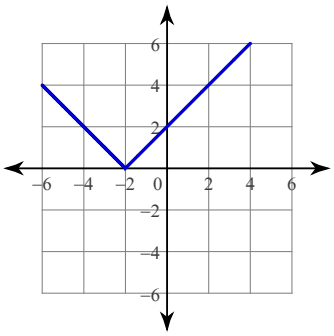
Answers to Test (ID: 1)

1) 4
2) $\sqrt{181}$
3) $\sqrt{109}$
4) $3\sqrt{5}$
5) $2\sqrt{29}$
6) $2\sqrt{26}$
7) $5\sqrt{2}$
8) $4\sqrt{5}$
9) $2\sqrt{13}$
10) $8\sqrt{2}$
11) 5
12) $5\sqrt{2}$
13) $2\sqrt{10}$
14) $5\sqrt{2}$
15) $5\sqrt{5}$
16) $2\sqrt{17}$
17) $4\sqrt{2}$
18) $2\sqrt{34}$
19) $3\sqrt{5}$
20) $2\sqrt{5}$

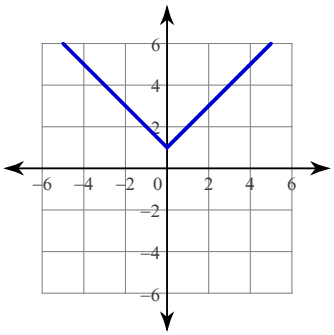
21)



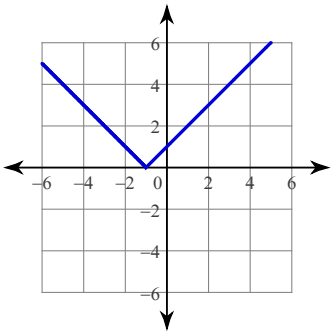
22)



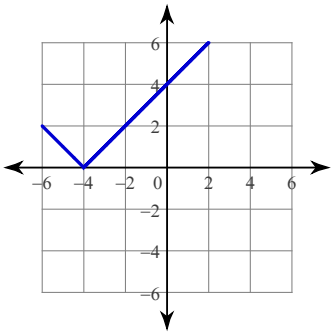
23)



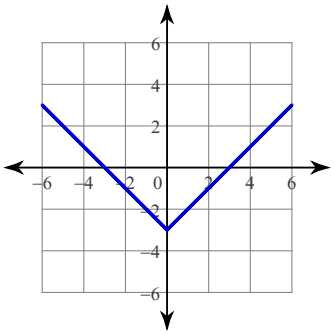
24)



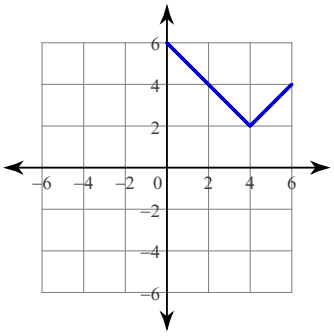
25)



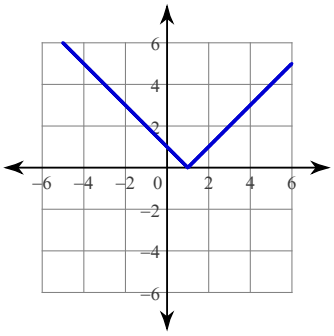
26)



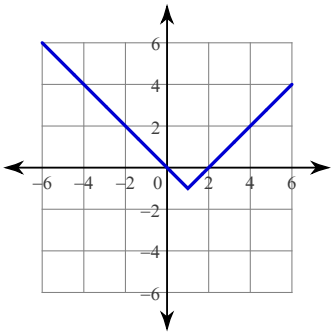
27)



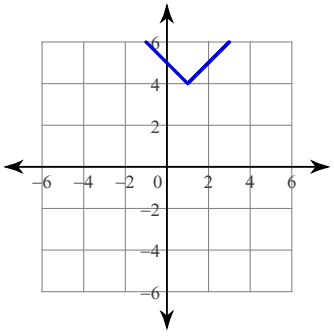
28)



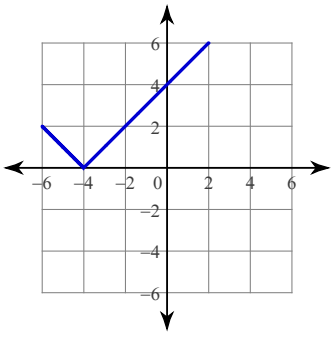
29)



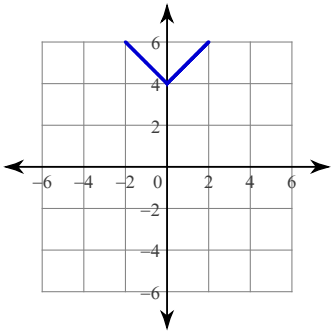
30)



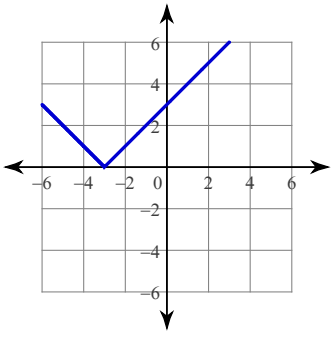
31)



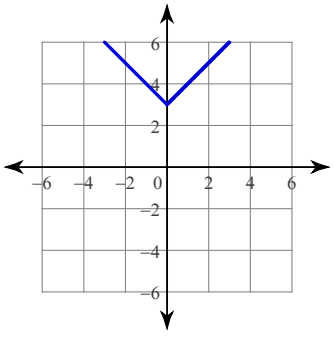
32)



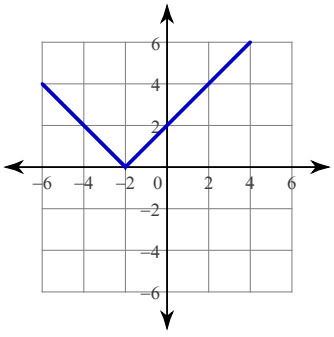
33)

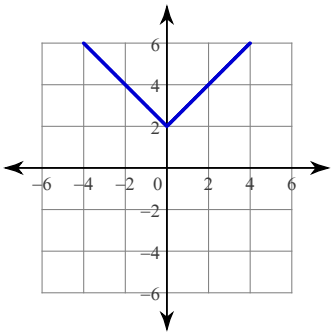


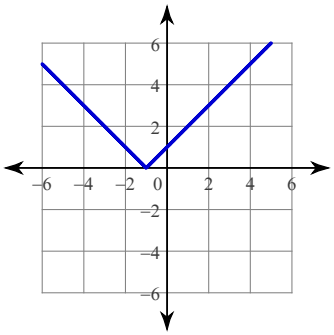
34)

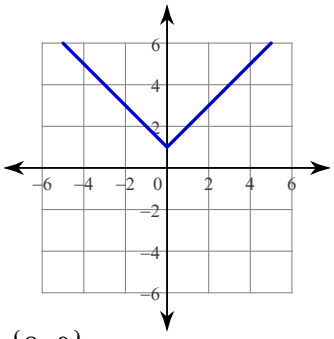


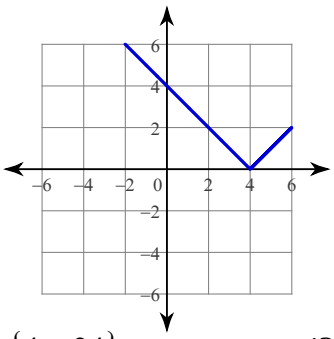
35)

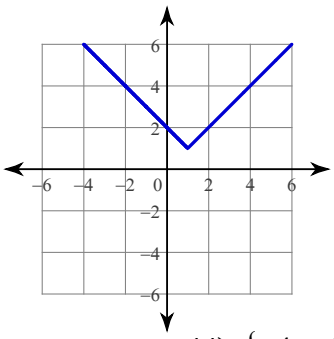


36) 

37) 

38) 

39) 

40) 

41) $\{8, 0\}$

42) $\{4, -24\}$
43) $\{28, -8\}$
44) $\{-4, -6\}$
45) $\{8, -8\}$
46) $\{-8, 8\}$
47) $\{10, -10\}$
48) $\{12, -12\}$
49) $\{12, 2\}$
50) $\{6, -4\}$
51) $\{3, -7\}$
52) $\{9, -9\}$
53) $\{-9, 9\}$
54) $\{4, -4\}$
55) $\{20, -20\}$
56) $\{9, -9\}$
57) $\{8, -26\}$
58) $\{2, -8\}$
59) $\{-4, -14\}$
60) $\{3, 1\}$
61) $\left\{-\frac{3}{10}\right\}$
62) $\{1\}$
63) $\{0\}$
64) $\left\{-\frac{1}{2}\right\}$
65) $\{2\}$
66) $\{0\}$
67) $\left\{-\frac{7}{2}\right\}$
68) $\left\{\frac{1}{2}\right\}$
69) $\left\{\frac{2}{3}\right\}$
70) { All real numbers. }
71) $\{-6\}$
72) $\{-8\}$
73) $\{-3\}$
74) $\{9\}$
75) $\left\{\frac{1}{4}\right\}$
76) No solution.
77) $\{1\}$
78) $\{1\}$
79) $\{-9\}$
80) No solution.
81) $\{4, -4\}$
82) $\left\{\frac{\sqrt{10}}{2}, -\frac{\sqrt{10}}{2}\right\}$
83) $\left\{\frac{9}{4}\right\}$
84) $\left\{-\frac{1}{9}\right\}$
85) $\{9\}$
86) $\{-144\}$
87) $\{44, -44\}$
88) $\{98\}$
89) $\left\{\frac{63}{5}\right\}$
90) $\{5, -5\}$
91) $\{0\}$
92) $\{2\}$
93) $\{-6\}$
94) $\{0\}$
95) $\{8\}$
96) $\{7\}$
97) $\{2\}$
98) $\{3\}$
99) $\{0\}$
100) $\{3\}$
101) $\{98\}$
102) $\{16\}$
103) $\{64\}$
104) $\{25\}$
105) $\{100\}$
106) $\{7\}$
107) $\{16\}$
108) $\{81\}$
109) $\{-2\}$
110) $\{1, -1\}$
111) $\{-1\}$
112) $\{0\}$
113) $\left\{-\frac{2}{3}\right\}$
114) $\{3\}$
115) $\{0\}$
116) $\{1\}$
117) $\left\{-\frac{9}{10}\right\}$
118) $\left\{\frac{1}{6}\right\}$
119) $\{0\}$
120) No solution.
121) $\{-30\}$
122) $\left\{\frac{1}{2}\right\}$
123) $\{-1\}$
124) $\left\{\frac{1}{2}\right\}$
125) $\{-1\}$
126) No solution.
127) $\{1\}$
128) $\{1\}$
129) $\{-11\}$
130) $\{-1\}$
131) $\left\{\frac{5}{2e^4}\right\}$
132) $\left\{-\frac{172}{25}\right\}$

133) $\left\{\frac{16}{15}\right\}$ 134) $\left\{-\frac{23}{45}\right\}$ 135) $\left\{\frac{55}{49}\right\}$ 136) $\{165\}$

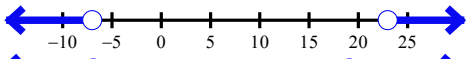
137) $\{67\}$ 138) $\{16, -16\}$ 139) $\left\{\frac{27}{2}, -\frac{27}{2}\right\}$ 140) $\{e^2, -e^2\}$

141) $\{125, -125\}$ 142) $\{16\}$ 143) $\{64, -64\}$ 144) $\{65\}$

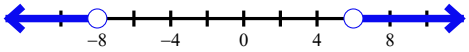
145) $\{17\}$ 146) $\{69, -59\}$ 147) $\{53\}$ 148) $\{2\}$

149) $\{64\}$ 150) $\{88\}$

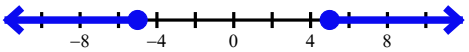
151) $k > 23$ or $k < -7$:



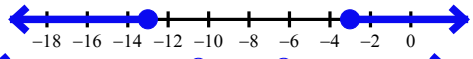
152) $p > 6$ or $p < -8$:



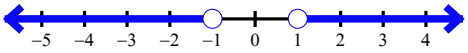
153) $n \le -5$ or $n \ge 5$:



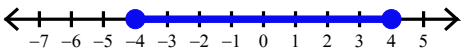
154) $x \ge -3$ or $x \le -13$:



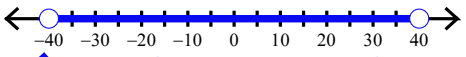
155) $m < -1$ or $m > 1$:



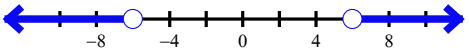
156) $-4 \le r \le 4$:



157) $-40 < x < 40$:

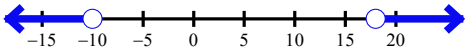


158) $n > 6$ or $n < -6$:



159) $-4 \le b \le -2$:

160) $v > 18$ or $v < -10$:



161) $\frac{3\pi}{2}$ ft 162) $\frac{33\pi}{2}$ ft 163) 4π ft 164) $\frac{247\pi}{12}$ ft

165) $\frac{7\pi}{2}$ ft 166) $\frac{57\pi}{2}$ cm 167) $\frac{11\pi}{2}$ km 168) $\frac{28\pi}{3}$ km

169) $\frac{45\pi}{4}$ in 170) 14π mi 171) $\frac{45\pi}{2}$ m 172) $\frac{91\pi}{12}$ km

173) $\frac{33\pi}{2}$ cm 174) $\frac{39\pi}{2}$ cm 175) $\frac{20\pi}{3}$ cm 176) $\frac{7\pi}{3}$ cm

177) $\frac{25\pi}{2}$ cm 178) $\frac{11\pi}{4}$ ft 179) $\frac{25\pi}{2}$ yd 180) $\frac{20\pi}{3}$ yd

181) 555° and −165° 182) 138° and −222° 183) 125° and −595° 184) 120° and −240°

185) 486° and −234° 186) 80° and −640° 187) 132° and −228° 188) 40° and −680°

189) 660° and −60° 190) 480° and −240° 191) 540° and −180° 192) 50° and −310°

193) 70° and −290° 194) 220° and −500° 195) 245° and −475° 196) 398° and −322°

197) 515° and −205° 198) 205° and −515° 199) 26° and −334° 200) 160° and −200°

201) 152° and −568° 202) 280° and −440° 203) 140° and −580° 204) 180° and −180°

205) 100° and −620° 206) 420° and −300° 207) 375° and −345° 208) 555° and −165°

209) 495° and −225° 210) 270° and −450° 211) 500° 212) 1080°

213) −860° 214) −285° 215) −60° 216) 160°

217) 740° 218) 960° 219) −620° 220) −400°

221) 850° 222) 820° 223) −730° 224) −510°

225) 70° 226) 290° 227) 865° 228) −1075°

229) −850° 230) −270° 231) IV 232) III

233) III 234) II 235) I 236) I

237) IV 238) IV 239) III 240) II

241) 65° 242) 50° 243) 75° 244) 50°

245) 75° 246) 15° 247) 30° 248) 40°

249) 30° 250) 25° 251) $\frac{448\pi}{3}$ mi² 252) $\frac{525\pi}{4}$ mi²

253) $\frac{243\pi}{4}$ mi² 254) $\frac{363\pi}{8}$ km² 255) $\frac{1183\pi}{12}$ ft² 256) $\frac{147\pi}{8}$ ft²

257) $\frac{1805\pi}{12}$ in²

258) 40π in²

259) $\frac{16\pi}{3}$ in²

260) $\frac{675\pi}{4}$ yd²

261) $\frac{125\pi}{3}$ yd²

262) $\frac{605\pi}{8}$ yd²

263) 49π km²

264) $\frac{289\pi}{6}$ ft²

265) 42π ft²

266) $\frac{64\pi}{3}$ ft²

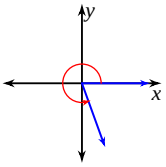
267) $\frac{169\pi}{12}$ in²

268) 12π in²

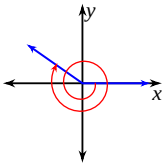
269) $\frac{81\pi}{4}$ cm²

270) $\frac{200\pi}{3}$ km²

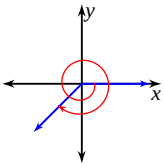
271)



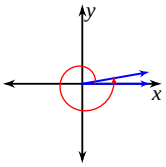
272)



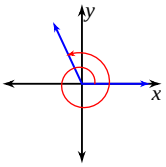
273)



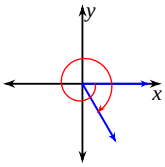
274)



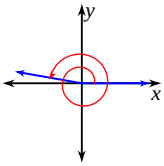
275)



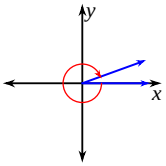
276)



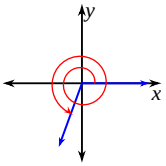
277)



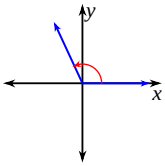
278)



279)



280)



281) 76.7 km²

282) 84.2 yd²

283) 16.1 m²

284) 5.4 ft²

285) 17 m²

286) 19.3 ft²

287) 76.3 cm²

288) 32.2 in²

289) 41.5 cm²

290) 80.3 in²

291) 32.2 mi²

292) 66.5 km²

293) 15.1 mi²

294) 83.2 km²

295) 31.3 yd²

296) 45.6 km²

297) 60.5 yd²

298) 42.6 m²

299) 37.6 ft²

300) 27.9 m²

301) 37.9 m²

302) 44 ft²

303) 75.6 m²

304) 28.6 ft²

305) 47.4 cm²

306) 24 in²

307) 20.5 cm²

308) 52.8 in²

309) 9.1 mi²

310) 23.3 km²

311) 63.2 cm²

312) 26.8 ft²

313) 4.8 cm²

314) 91.2 in²

315) 15.8 cm²

316) 92.5 in²

317) 19 mi²

318) 40.2 km²

319) 5.5 mi²

320) 59.8 km²

321) 47.5 yd²

322) 58.7 m²

323) 11.6 yd²

324) 64.9 m²

325) 23.6 ft²

326) 14.9 cm²

327) 47.5 ft²

328) 18.1 cm²

329) 55.9 in²

330) 44.8 cm²

331) 9.5 cm²

332) 40.5 ft²

333) 29 cm²

334) 20.6 in²

335) 27.2 cm²

336) 27.4 in²

337) 20.3 mi²

338) 80.8 km²

339) 23.1 mi²

340) 35.7 km²

341) 51.8 mi²

342) 80.3 in²

343) 35.6 mi²

344) 35.2 km²

345) 27.7 mi²

346) 17.9 km²

347) 67.9 yd²

348) 30 m²

349) 48.5 yd²

350) 34.4 m²

351) 8.3 ft²

352) 20.8 cm²

353) 44.1 ft²

354) 20.6 cm²

355) 59.9 in²

356) 38.5 mi²

357) 107.1 in²

358) 9.4 mi²

359) 49.1 km²

360) 41.6 yd²

361) 32

362) 25

363) 58

364) 200

365) −28

366) −113

367) −2

368) 211

369) −54

370) 204

371) 40

372) 39

373) −53

374) 25

375) −202

376) −3

377) −14

378) −27

379) 4

380) 26

381) 162

382) 30

383) −189

384) −29

385) 169

386) 28

387) 20

388) 21

389) −3

390) −30

391) Common Difference: $d = 30$

$a_{52} = 1546$

Explicit: $a_n = -14 + 30n$

392) Common Difference: $d = 100$
$a_{52} = 5116$
Explicit: $a_n = -84 + 100n$

393) Common Difference: $d = 8$
$a_{52} = 387$
Explicit: $a_n = -29 + 8n$

394) Common Difference: $d = 10$
$a_{52} = 489$
Explicit: $a_n = -31 + 10n$

395) Common Difference: $d = 10$
$a_{52} = 533$
Explicit: $a_n = 13 + 10n$

396) Common Difference: $d = 10$
$a_{52} = 534$
Explicit: $a_n = 14 + 10n$

397) Not arithmetic

398) Not arithmetic

399) Not arithmetic

400) Not arithmetic

401) Common Difference: $d = 9$
$a_{52} = 447$
Explicit: $a_n = -21 + 9n$

402) Common Difference: $d = 10$
$a_{52} = 498$
Explicit: $a_n = -22 + 10n$

403) Common Difference: $d = -20$
$a_{52} = -987$
Explicit: $a_n = 53 - 20n$

404) Common Difference: $d = -200$
$a_{52} = -10167$
Explicit: $a_n = 233 - 200n$

405) Common Difference: $d = -200$
$a_{52} = -10204$
Explicit: $a_n = 196 - 200n$

406) Common Difference: $d = -4$
$a_{52} = -208$
Explicit: $a_n = -4n$

407) Common Difference: $d = 5$
$a_{52} = 251$
Explicit: $a_n = -9 + 5n$

408) Common Difference: $d = -7$
$a_{52} = -397$
Explicit: $a_n = -33 - 7n$

409) Common Difference: $d = 6$
$a_{52} = 346$
Explicit: $a_n = 34 + 6n$

410) Common Difference: $d = -7$
$a_{52} = -353$
Explicit: $a_n = 11 - 7n$

411) 210

412) 126

413) 201

414) 68

415) 204

416) 48

417) 371

418) 224

419) 133

420) 182

421) −106

422) 180

423) −112

424) −28

425) 92

426) 133

427) −295

428) −297

429) −392

430) −252

431) $-6a^2b$

432) 1

433) $48x^2$

434) $24b^2a^2$

435) $54m^2$

436) $-4yx^3$

437) −1

438) $-108x^3y$

439) $-12y$

440) $3uv^2$

441) $(x-16)^2 + (y+15)^2 = 4$

442) $(x-4)^2 + (y-10)^2 = 25$

443) $\left(x - \frac{21}{2}\right)^2 + \left(y + \frac{21}{2}\right)^2 = 9$

444) $\left(x + \frac{31}{2}\right)^2 + \left(y - \sqrt{185}\right)^2 = 1$

445) $\left(x - \sqrt{233}\right)^2 + \left(y - 4\sqrt{2}\right)^2 = 2$

446) $(x+10)^2 + (y+7)^2 = 49$

447) $(x+13)^2 + (y+7)^2 = 16$

448) $(x+1)^2 + (y-1)^2 = 36$

449) $(x-10)^2 + (y-8)^2 = 9$

450) $\left(x + \frac{15}{2}\right)^2 + \left(y - \frac{13}{2}\right)^2 = 36$

451) $(x+5)^2 + (y-7)^2 = 64$

452) $(x-6)^2 + (y-14)^2 = 9$

453) $(x+15)^2 + (y+12)^2 = 1$

454) $(x+4)^2 + (y+5)^2 = 106$

455) $(x-9)^2 + (y-2)^2 = 36$

456) $(x+13)^2 + (y-10)^2 = 35$

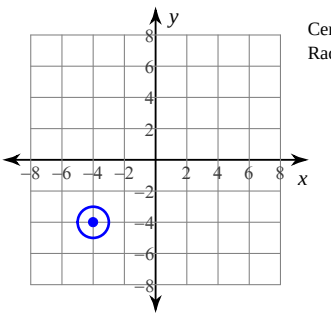
457) $(x+1)^2 + (y-16)^2 = 4$

458) $(x-10)^2 + (y+10)^2 = 49$

459) $(x+11)^2 + (y+2)^2 = 4$

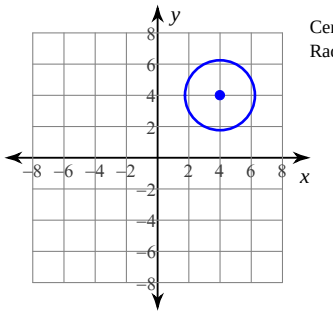
460) $(x-1)^2 + (y-5)^2 = 64$

461)



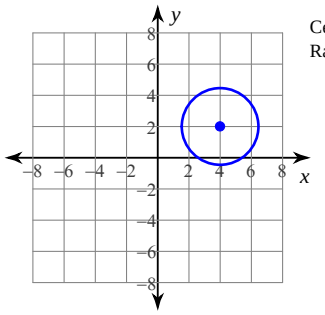
Center: (−4, −4)
Radius: 1

462)



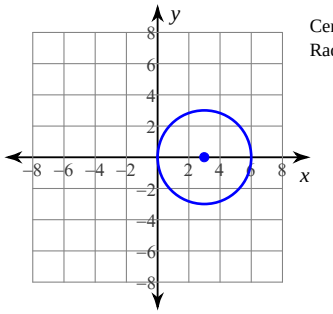
Center: $(4, 4)$
Radius: $\sqrt{5}$

463)



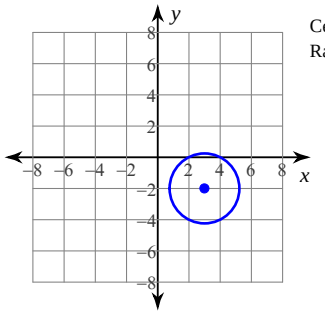
Center: $(4, 2)$
Radius: $\sqrt{6}$

464)



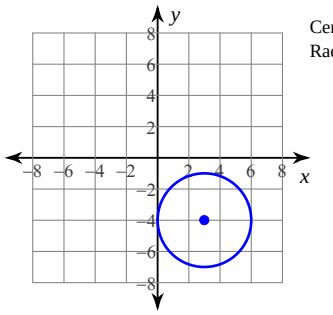
Center: $(3, 0)$
Radius: 3

465)



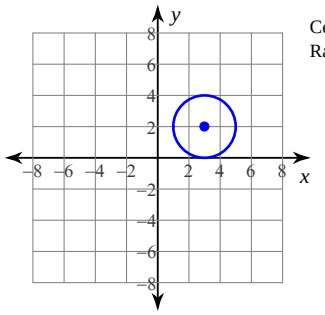
Center: $(3, -2)$
Radius: $\sqrt{5}$

466)



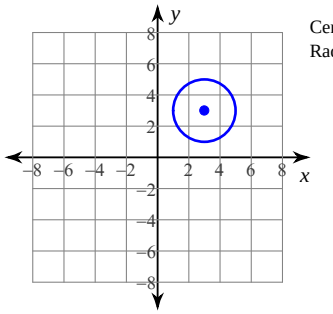
Center: $(3, -4)$
Radius: 3

467)



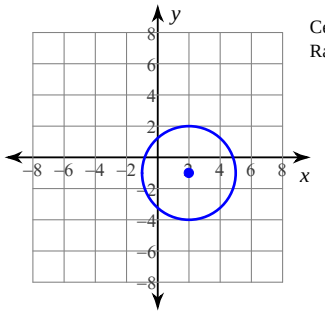
Center: $(3, 2)$
Radius: 2

468)



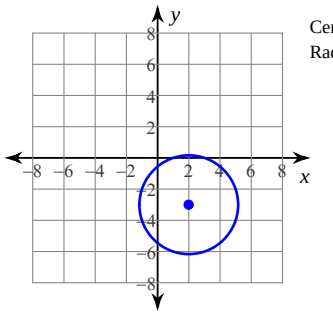
Center: $(3, 3)$
Radius: 2

469)



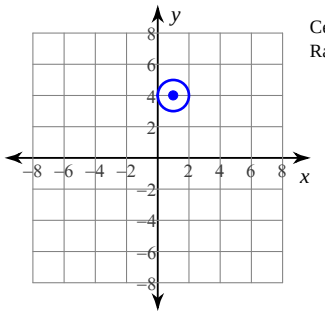
Center: $(2, -1)$
Radius: 3

470)



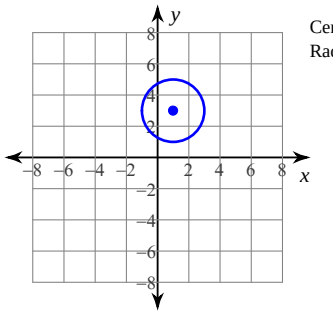
Center: $(2, -3)$
Radius: $\sqrt{10}$

471)



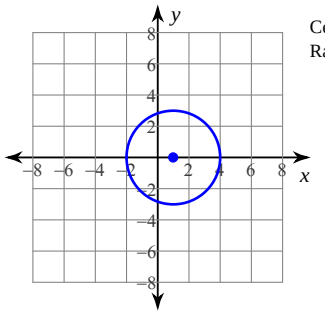
Center: $(1, 4)$
Radius: 1

472)



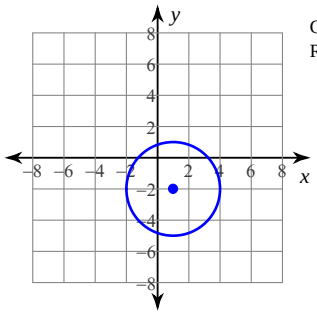
Center: $(1, 3)$
Radius: 2

473)



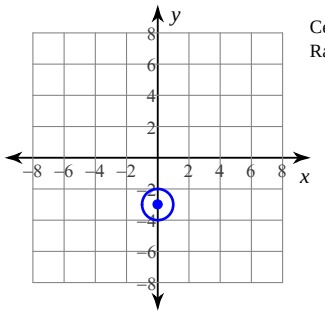
Center: $(1, 0)$
Radius: 3

474)



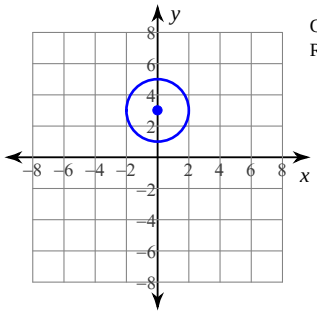
Center: $(1, -2)$
Radius: 3

475)



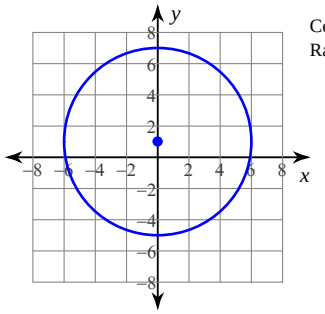
Center: $(0, -3)$
Radius: 1

476)



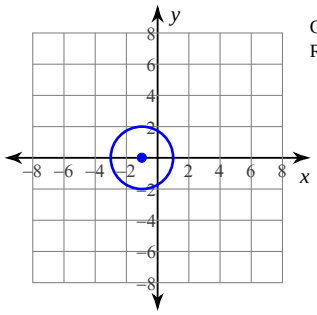
Center: $(0, 3)$
Radius: 2

477)



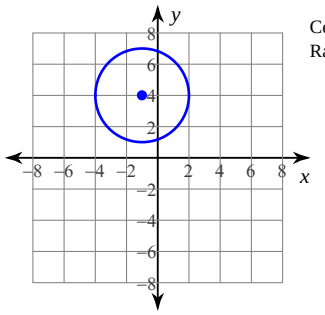
Center: $(0, 1)$
Radius: 6

478)



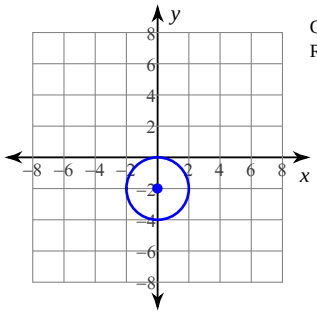
Center: $(-1, 0)$
Radius: 2

479)



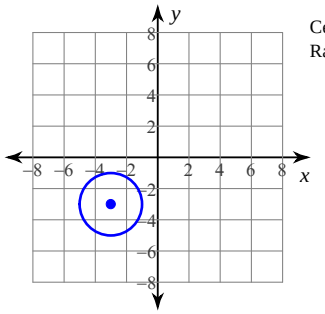
Center: $(-1, 4)$
Radius: 3

480)



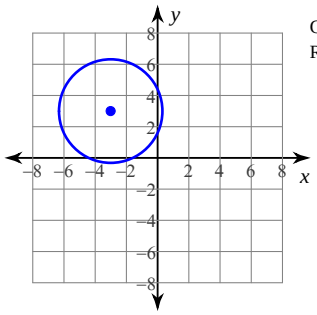
Center: $(0, -2)$
Radius: 2

481)



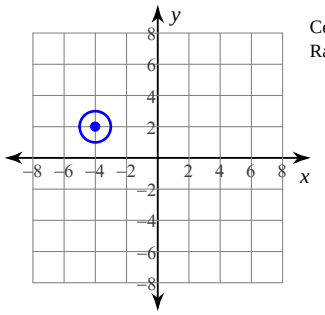
Center: $(-3, -3)$
Radius: 2

482)



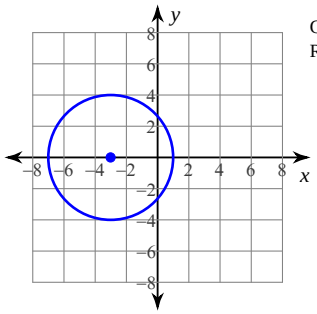
Center: $(-3, 3)$
Radius: $\sqrt{11}$

483)



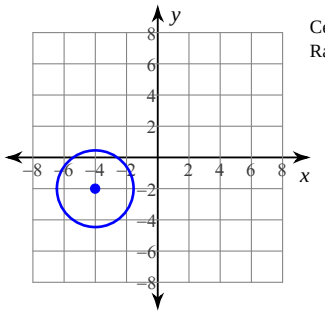
Center: $(-4, 2)$
Radius: 1

484)



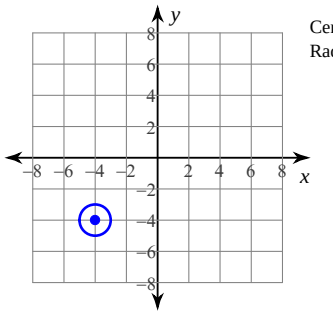
Center: $(-3, 0)$
Radius: 4

485)



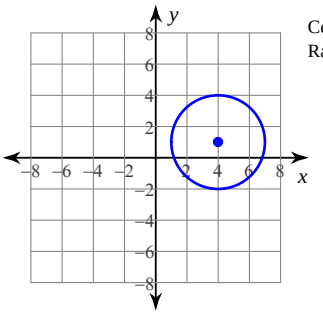
Center: $(-4, -2)$
Radius: $\sqrt{6}$

486)



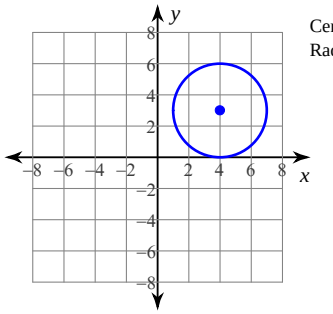
Center: $(-4, -4)$
Radius: 1

487)



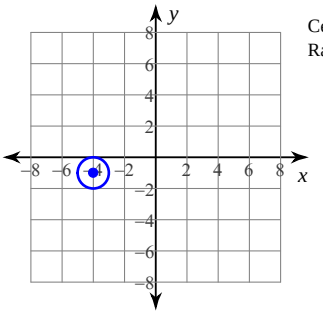
Center: $(4, 1)$
Radius: 3

488)



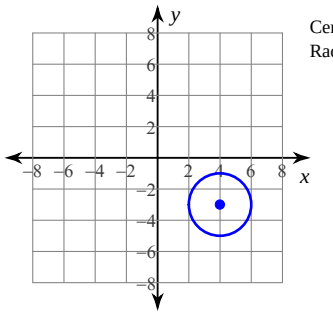
Center: $(4, 3)$
Radius: 3

489)



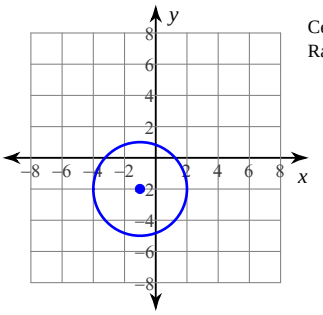
Center: $(-4, -1)$
Radius: 1

490)



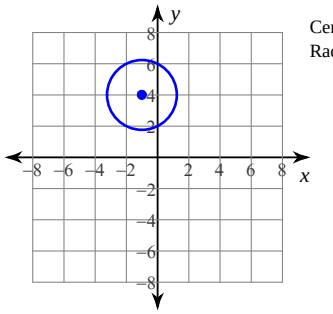
Center: $(4, -3)$
Radius: 2

491)



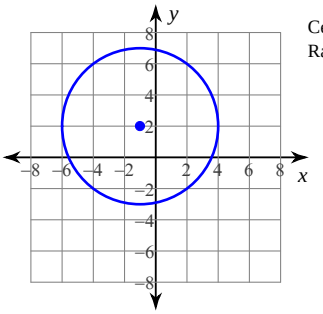
Center: $(-1, -2)$
Radius: 3

492)



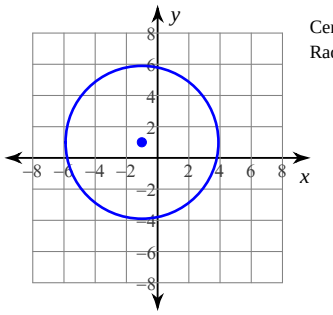
Center: $(-1, 4)$
Radius: $\sqrt{5}$

493)



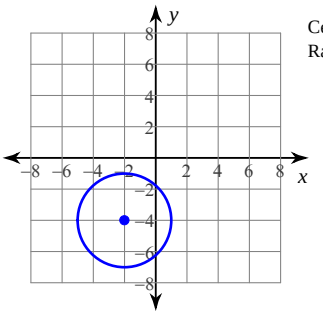
Center: $(-1, 2)$
Radius: 5

494)



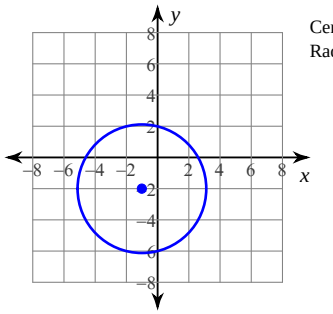
Center: $(-1, 1)$
Radius: $2\sqrt{6}$

495)



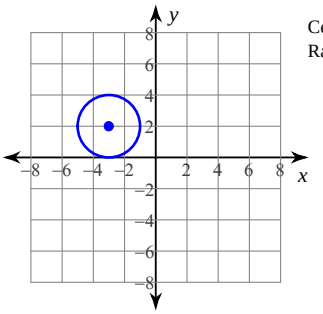
Center: $(-2, -4)$
Radius: 3

496)

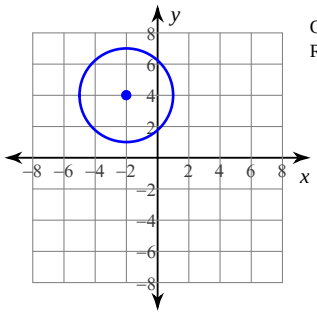


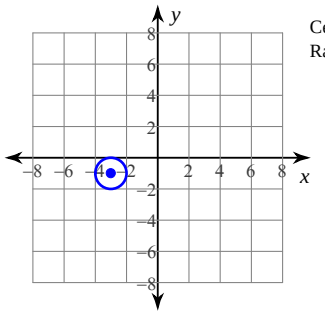
Center: $(-1, -2)$
Radius: $\sqrt{17}$

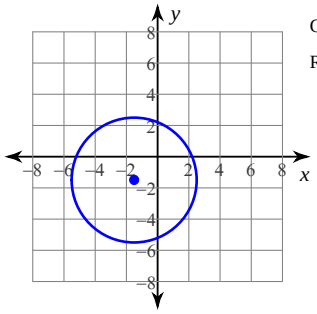
497)



Center: $(-3, 2)$
Radius: 2

498) 

499) 

500) 

501) $7 - 9x$

502) $-4p$

503) $-6n$

504) $m - 14$

505) $r + 8$

506) $5x$

507) $4b$

508) $4n$

509) $-6 - 13v$

510) $3x$

511) $\dfrac{16}{81 - 9x}$

512) $\dfrac{64u}{-u^2 + 15u + 16}$

513) $\dfrac{5 - x}{5x^2}$

514) $16 - 4a$

515) $\dfrac{2x^2}{32 + x}$

516) $\dfrac{135 + 25a^2}{27a^3}$

517) $\dfrac{5}{8m}$

518) $\dfrac{16}{250 - 5m^2}$

519) $\dfrac{x^2 + 125}{5x - 15}$

520) $\dfrac{5x - 5}{x + 24}$

521) $-5x + 1$

522) $10n - 4$

523) $-5b$

524) $7 - 5r$

525) $9x$

526) $1 + 4n$

527) $7a$

528) $-8v$

529) $9x + 2$

530) $-10x$

531) 8

532) $-\dfrac{(n - 3)}{6}$

533) $\dfrac{p + 3}{p + 8}$

534) 6

535) $\dfrac{9}{10}$

536) $-5m^2$

537) $\dfrac{r - 7}{8}$

538) $3x$

539) $\dfrac{-n + 4}{3n}$

540) $\dfrac{3b^2}{2(b - 7)}$

541) $\dfrac{9}{n + 2}$

542) $\dfrac{x - 1}{7}$

543) $\dfrac{4}{3}$

544) $\dfrac{1}{2}$

545) $-\dfrac{9}{2}$

546) $\dfrac{5}{x - 8}$

547) $\dfrac{4n^2}{3}$

548) $-\dfrac{(m + 7)}{8m}$

549) $\dfrac{7}{p + 7}$

550) $\dfrac{x + 8}{(x - 8)(x + 4)}$

551) $-n^4 + 13n^3 + 7n^2$

552) $12b^2 - 8$

553) $6x^4 + 9x - 1$

554) $-10x^3 + 6x^2 + 3$

555) $x^4 - 2x - 1$

556) $10k^4 + 13k^2 + 3$

557) $5r^4 + 6r^3 + 3r^2 - 14r$

558) $6m^4 - 6m^3 + 6m^2 + 12m$

559) $-5n^3 - 8$

560) $7b^4 - 7b^3 - 11b + 6$

561) $\dfrac{5x - 10}{x - 5}$

562) $\dfrac{-3n + 3 + 4n^2}{(n + 3)(n - 1)}$

563) $\dfrac{12m^2 + 73m - 5}{4m(m + 6)}$

564) $\dfrac{9r + 27}{(r + 1)(r + 4)}$

565) $\dfrac{19x + 15}{4x(x + 5)}$

566) $\dfrac{9n + 9}{(n + 3)(n - 3)}$

567) $\dfrac{3b^2 + 14b + 10}{(b + 2)(b + 3)}$

568) $\dfrac{10}{3}$

569) $\dfrac{-p^4 + 4p^3 - 6 + 3p}{3p^3(p - 2)}$

570) $\dfrac{32x^2 + 22x}{5(x + 1)(x - 4)}$

571) $\dfrac{x^2 - 6x + 9}{4x - 12 + x^4}$

572) $\dfrac{16}{x - x^3}$

573) $\dfrac{54}{27 - 4x}$

574) $\dfrac{2m + 2}{m^2 + 2m}$

575) $\dfrac{u^3 - 12}{48u^2}$

576) $\dfrac{5x}{x^2 - 20}$

577) $\dfrac{2u^2 - 4}{u^2}$

578) $\dfrac{624-2x-x^2}{25x^2+50x+25}$ 579) $\dfrac{8}{15a}$ 580) $\dfrac{8x-5-x^2}{x^3-4x^2-3x+18}$

581) $\dfrac{4b}{7}$ 582) $-\dfrac{(r+10)}{r+7}$ 583) $\dfrac{x+8}{5}$ 584) -1

585) $b+7$ 586) $10v^2$ 587) $\dfrac{5x}{2}$ 588) $\dfrac{x+4}{x-5}$

589) 10 590) $-\dfrac{6a^2}{a+2}$ 591) $\dfrac{x+3}{8}$ 592) $\dfrac{p+5}{8}$

593) $-\dfrac{(n+4)}{9n^2}$ 594) $\dfrac{m-7}{(m-4)(m-9)}$ 595) $\dfrac{10}{x+1}$ 596) $\dfrac{r+9}{21}$

597) $-\dfrac{7}{6n^2}$ 598) $\dfrac{b+4}{b-7}$ 599) $\dfrac{v+1}{9v}$ 600) 5

601) $9;\ (y-3)^2$ 602) $100;\ (x-10)^2$ 603) $\dfrac{529}{144};\ \left(p+\dfrac{23}{12}\right)^2$ 604) $49;\ (x+7)^2$

605) $289;\ (n-17)^2$ 606) $\dfrac{169}{4};\ \left(a+\dfrac{13}{2}\right)^2$ 607) $36;\ (x-6)^2$ 608) $\dfrac{361}{4};\ \left(x-\dfrac{19}{2}\right)^2$

609) $\dfrac{289}{4};\ \left(r+\dfrac{17}{2}\right)^2$ 610) $\dfrac{25}{4};\ \left(m-\dfrac{5}{2}\right)^2$ 611) $\{10, 4\}$ 612) $\{23, -3\}$

613) $\{6, -4\}$ 614) $\{4+\sqrt{13}, 4-\sqrt{13}\}$ 615) $\{6, -8\}$

616) $\{6, -2\}$ 617) $\{8+\sqrt{123}, 8-\sqrt{123}\}$ 618) $\{6+\sqrt{74}, 6-\sqrt{74}\}$

619) $\{10+\sqrt{13}, 10-\sqrt{13}\}$ 620) $\{-4+2\sqrt{29}, -4-2\sqrt{29}\}$ 621) $\{12, -4\}$

622) $\{8+\sqrt{86}, 8-\sqrt{86}\}$ 623) $\{11, -7\}$ 624) $\{6, 4\}$

625) $\{-3, -5\}$ 626) $\{-2+2\sqrt{22}, -2-2\sqrt{22}\}$ 627) $\{-4, -10\}$

628) $\{-6+\sqrt{78}, -6-\sqrt{78}\}$ 629) $\{3+6\sqrt{3}, 3-6\sqrt{3}\}$ 630) $\{-2, -4\}$

631) $\{-1, -7\}$ 632) $\{7, -1\}$ 633) $\{-5, -7\}$

634) $\{7+\sqrt{39}, 7-\sqrt{39}\}$ 635) $\{1+7\sqrt{2}, 1-7\sqrt{2}\}$ 636) $\{-2+\sqrt{11}, -2-\sqrt{11}\}$

637) $\{2, -18\}$ 638) $\{-3, -7\}$ 639) $\{-1+4\sqrt{3}, -1-4\sqrt{3}\}$

640) $\{3+\sqrt{74}, 3-\sqrt{74}\}$ 641) $-\dfrac{4i}{9}$ 642) $\dfrac{3i}{5}$

643) $-\dfrac{i}{2}$ 644) $\dfrac{i-8}{7}$ 645) $\dfrac{8i-10}{3}$ 646) $i-7$

647) $\dfrac{-7i+10}{3}$ 648) $\dfrac{7i+3}{5}$ 649) $\dfrac{7i-6}{8}$ 650) $-6i+4$

651) $-7+32i$ 652) $10+51i$ 653) $-46-4i$ 654) $35+5i$

655) $-60+60i$ 656) $140-56i$ 657) $-48-84i$ 658) $-84+60i$

659) $-120+60i$ 660) $48-14i$ 661) $9+10i$ 662) $-12-14i$

663) $-10-2i$ 664) $6-10i$ 665) $2+5i$ 666) $-5-8i$

667) $2-9i$ 668) $-3-11i$ 669) $-9-9i$ 670) $2-13i$

671) $\dfrac{2+62i}{37}$ 672) $\dfrac{23-i}{106}$ 673) $\dfrac{3-11i}{13}$ 674) $\dfrac{9+84i}{61}$

675) $\dfrac{-27-38i}{53}$ 676) $\dfrac{7+i}{7}$ 677) $\dfrac{-44-20i}{73}$ 678) $\dfrac{-7+9i}{10}$

679) $\dfrac{107-66i}{145}$ 680) $\dfrac{3i-1}{10}$ 681) $\dfrac{-7i-9}{6}$ 682) $-\dfrac{7i}{2}$

683) $\dfrac{7i+4}{2}$ 684) $\dfrac{i}{4}$ 685) $-\dfrac{3i}{4}$ 686) $\dfrac{i}{5}$

687) $-5i$

688) $\frac{2i}{3}$

689) $-\frac{2i}{3}$

690) $\frac{4i}{9}$

691) $\frac{1}{6}$

692) $\frac{\sqrt{2}}{3}$

693) $\frac{3}{5}$

694) $\frac{\sqrt{3}}{20}$

695) $\frac{1}{8}$

696) $\frac{\sqrt{5}}{3}$

697) $\frac{\sqrt{5}}{15}$

698) $\frac{1}{3}$

699) $\frac{2\sqrt{2}}{15}$

700) $\frac{\sqrt{3}}{4}$

701) $\frac{25i - 20}{82}$

702) $\frac{i + 1}{6}$

703) $\frac{1 + 3i}{5}$

704) $\frac{-3 - 2i}{39}$

705) $\frac{56 + 63i}{145}$

706) $\frac{1 - i}{5}$

707) $\frac{-49i - 70}{149}$

708) $\frac{-11 + 37i}{149}$

709) $\frac{-15i - 6}{58}$

710) $\frac{14 - 44i}{41}$

711) $-19 + 23i$

712) $98i$

713) $22 - 26i$

714) $12 + 34i$

715) $48 + 18i$

716) $-128 - 16i$

717) $-30 - 6i$

718) $-14 + 22i$

719) $-41 + i$

720) $39 - 80i$

721) $3\sqrt{5} - 5$

722) $9\sqrt{2} + \sqrt{15}$

723) $45\sqrt{2} + 10\sqrt{3}$

724) $3\sqrt{2} + 2\sqrt{6}$

725) $-15 - 12\sqrt{5}$

726) $2\sqrt{3} + 3\sqrt{30}$

727) $15\sqrt{2} - 6\sqrt{5}$

728) $-16\sqrt{15} - 12\sqrt{2}$

729) $2\sqrt{3} + 4\sqrt{2}$

730) $5\sqrt{30} + 5$

731) $-\sqrt{5} - 4\sqrt{6}$

732) $-7\sqrt{3} - 3\sqrt{5}$

733) $-5\sqrt{5} + 4\sqrt{2}$

734) $-3\sqrt{5} - 8\sqrt{2}$

735) $2\sqrt{2} + 9\sqrt{3}$

736) $4\sqrt{6} - 2\sqrt{2}$

737) $-2\sqrt{5} - 3\sqrt{6}$

738) 0

739) $12\sqrt{5} - 2\sqrt{3}$

740) $-13\sqrt{6} - 2\sqrt{5}$

741) $\frac{8\sqrt{5}}{3}$

742) $\frac{5}{3}$

743) $\frac{5\sqrt{5}}{3}$

744) $\frac{\sqrt{3}}{8}$

745) $\frac{1}{20}$

746) $\frac{\sqrt{5}}{4}$

747) $\frac{\sqrt{5}}{6}$

748) $\frac{1}{5}$

749) $\frac{3}{5}$

750) $\frac{1}{8}$

751) $40 + 8\sqrt{10}$

752) $-8\sqrt{5} + 60\sqrt{2}$

753) $-20\sqrt{2} - 4\sqrt{30}$

754) $\sqrt{30} + 5\sqrt{3}$

755) $-25\sqrt{3} + 5\sqrt{15}$

756) $5\sqrt{3} + 4\sqrt{15}$

757) $10\sqrt{2} + 4\sqrt{5}$

758) $-10\sqrt{2} - 4\sqrt{5}$

759) $4\sqrt{5} - 20$

760) $4\sqrt{15} + 10\sqrt{3}$

761) $2\sqrt[4]{5k^2}$

762) $3x\sqrt[3]{5x^2}$

763) $2\sqrt[4]{4x}$

764) $4m\sqrt[3]{4m^2}$

765) $2m\sqrt[5]{5m^3}$

766) $4a^2\sqrt[3]{2a^2}$

767) $-5x\sqrt[3]{3x}$

768) $5x^2\sqrt[3]{2x^2}$

769) $2a\sqrt[4]{2a^3}$

770) $6x\sqrt{7}$

771) p^3

772) $2187k^{21}$

773) $729x^9$

774) $9n^2$

775) $5m^3$

776) $8r^2$

777) x^2

778) $10v^2$

779) b^{10}

780) $3x$

781) $\frac{5i}{8}$

782) $\frac{-6 + 8i}{25}$

783) $\frac{17 - 57i}{61}$

784) $-\frac{5i}{2}$

785) $\frac{-49i - 63}{130}$

786) $-\frac{i}{8}$

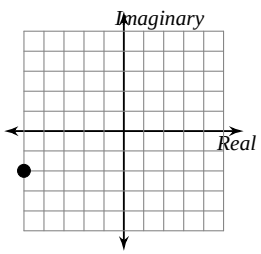
787) $\frac{-4i + 8}{5}$

788) $\frac{-18i + 81}{85}$

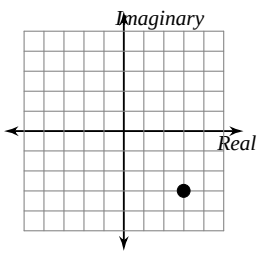
789) $\frac{2i}{3}$

790) $\frac{-3i - 6}{10}$

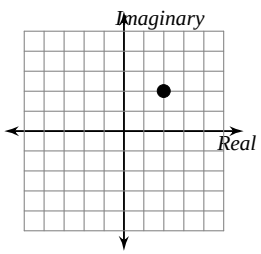
791)



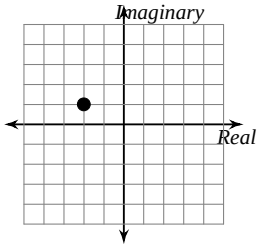
792)



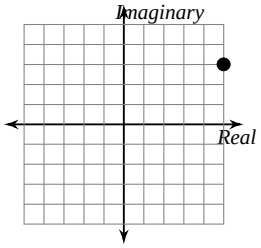
793)



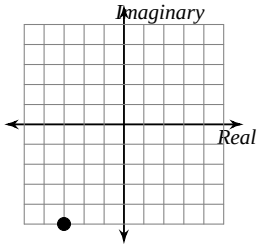
794)



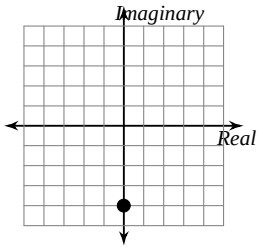
795)



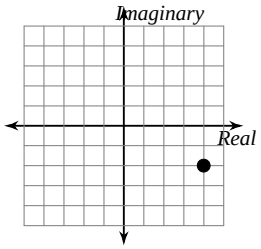
796)



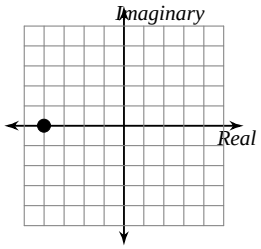
797)



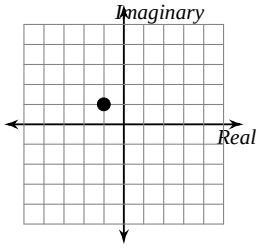
798)



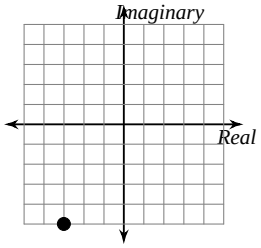
799)



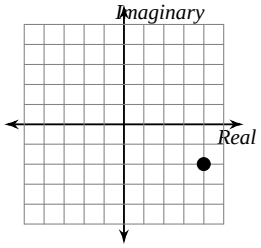
800)



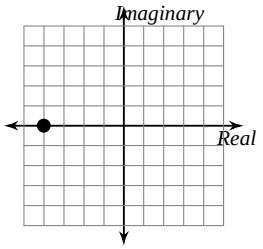
801)



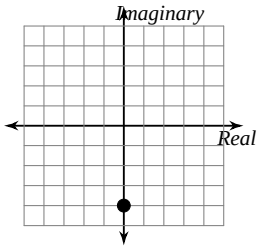
802)



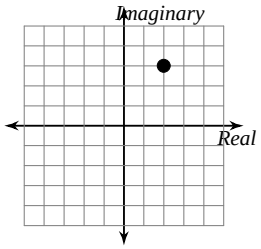
803)



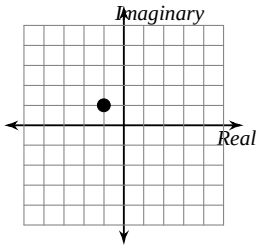
804)



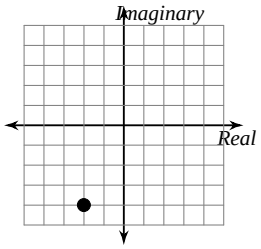
805)



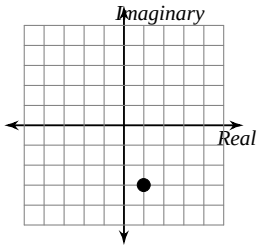
806)



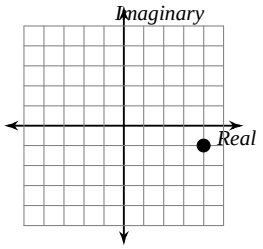
807)



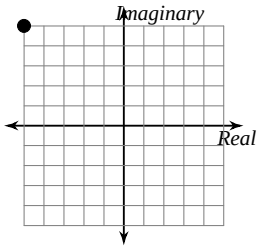
808)



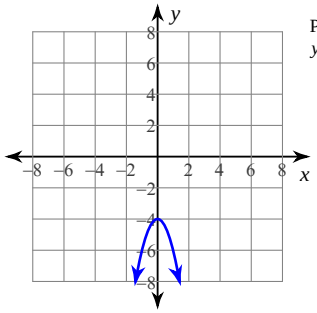
809)



810)

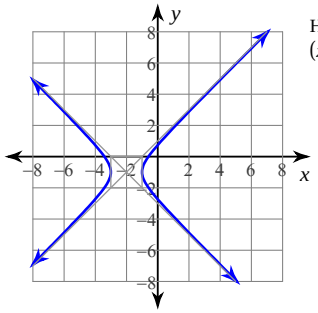


811)



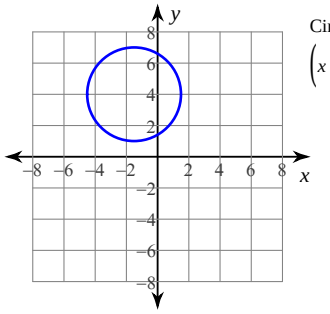
Parabola
$y = -2x^2 - 4$

812)



Hyperbola
$(x+2)^2 - (y+1)^2 = 1$

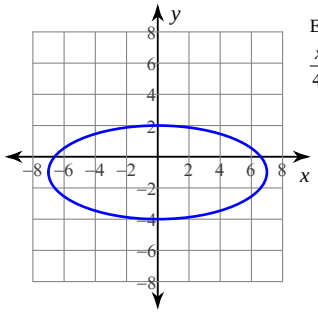
813)



Circle

$\left(x+\frac{3}{2}\right)^2+(y-4)^2=9$

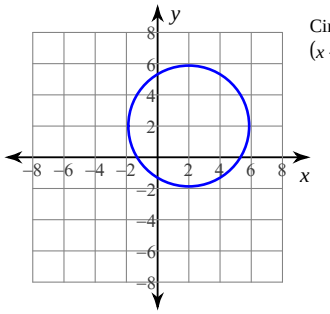
814)



Ellipse

$\frac{x^2}{49}+\frac{(y+1)^2}{9}=1$

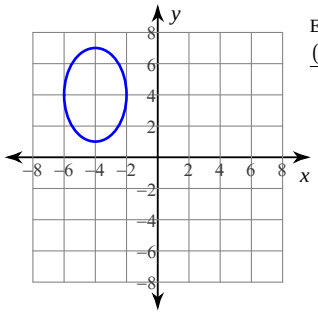
815)



Circle

$(x-2)^2+(y-2)^2=15$

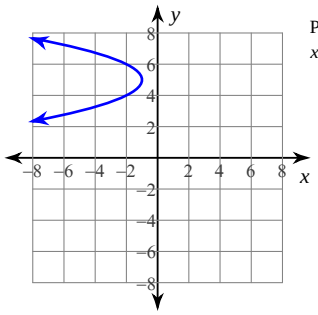
816)



Ellipse

$\frac{(x+4)^2}{4}+\frac{(y-4)^2}{9}=1$

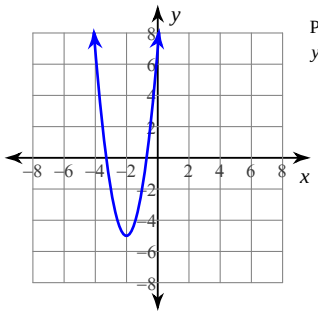
817)



Parabola

$x=-(y-5)^2-1$

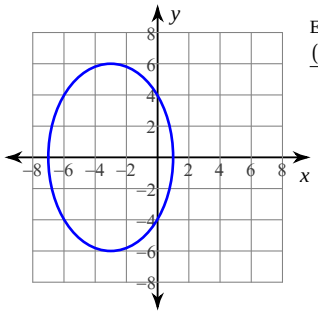
818)



Parabola

$y=3(x+2)^2-5$

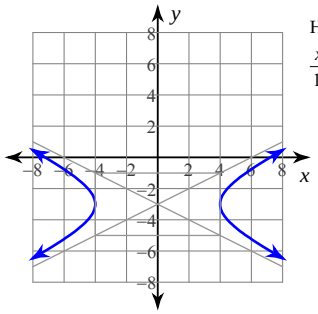
819)



Ellipse

$\frac{(x+3)^2}{16}+\frac{y^2}{36}=1$

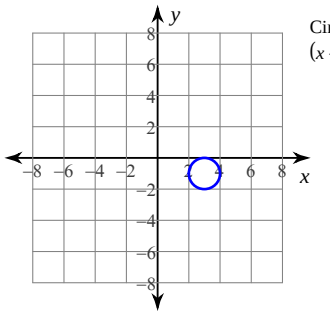
820)



Hyperbola

$\frac{x^2}{16}-\frac{(y+3)^2}{4}=1$

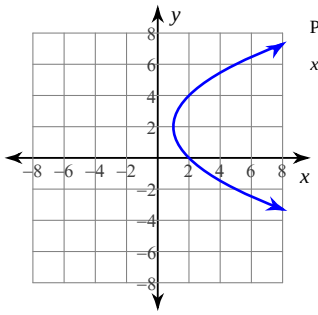
821)



Circle

$(x-3)^2+(y+1)^2=1$

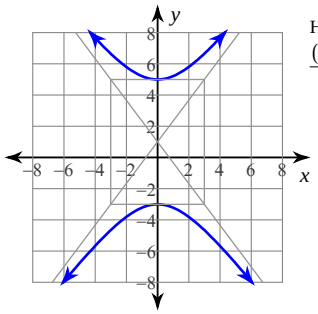
822)



Parabola

$x=\frac{1}{4}(y-2)^2+1$

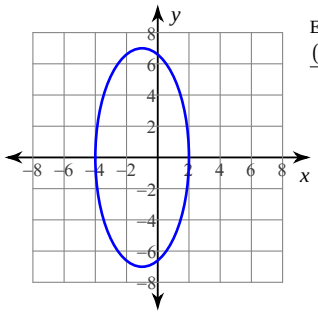
823)



Hyperbola

$\frac{(y-1)^2}{16}-\frac{x^2}{9}=1$

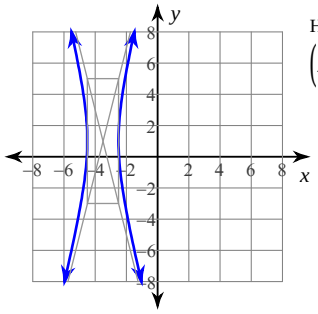
824)



Ellipse

$\frac{(x+1)^2}{9}+\frac{y^2}{49}=1$

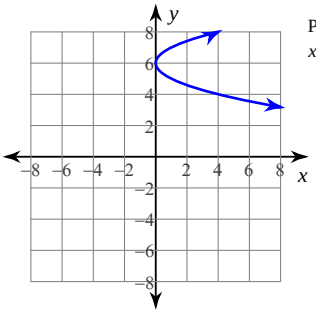
825)



Hyperbola

$\left(x+\frac{7}{2}\right)^2-\frac{(y-1)^2}{16}=1$

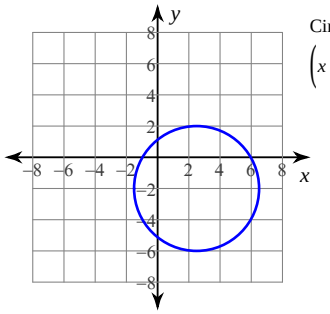
826)



Parabola

$x=(y-6)^2$

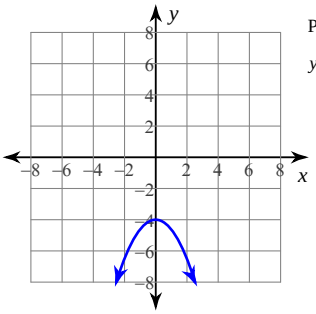
827)



Circle

$\left(x-\frac{5}{2}\right)^2+(y+2)^2=16$

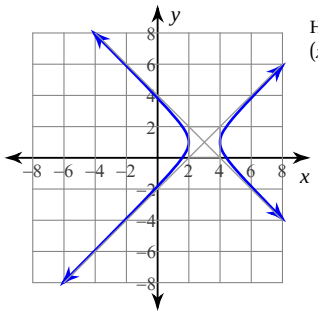
828)



Parabola

$y=-\frac{5}{8}x^2-4$

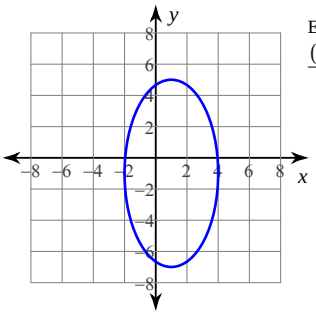
829)



Hyperbola

$(x-3)^2-(y-1)^2=1$

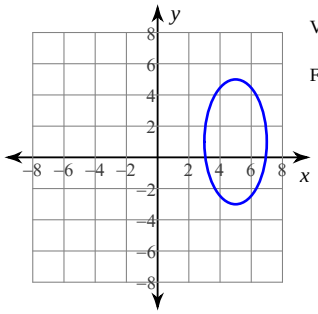
830)



Ellipse

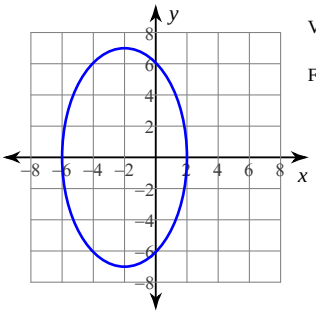
$\frac{(x-1)^2}{9}+\frac{(y+1)^2}{36}=1$

831)



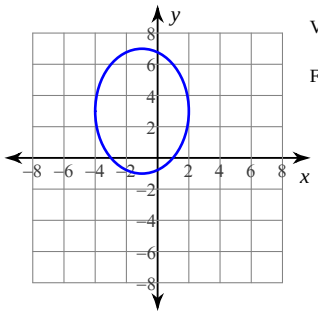
Vertices: $(5, 5)$
$(5, -3)$
Foci: $(5, 1+2\sqrt{3})$
$(5, 1-2\sqrt{3})$

832)



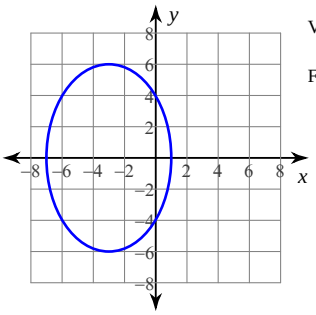
Vertices: $(-2, 7)$
$(-2, -7)$
Foci: $(-2, \sqrt{33})$
$(-2, -\sqrt{33})$

833)



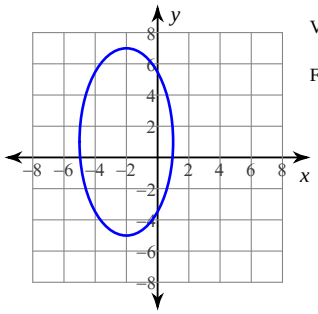
Vertices: $(-1, 7)$
$(-1, -1)$
Foci: $(-1, 3+\sqrt{7})$
$(-1, 3-\sqrt{7})$

834)



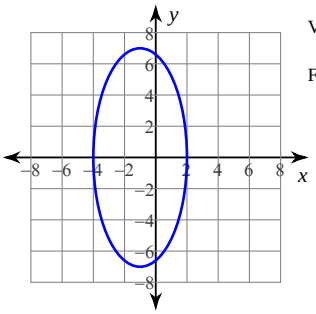
Vertices: $(-3, 6)$
$(-3, -6)$
Foci: $(-3, 2\sqrt{5})$
$(-3, -2\sqrt{5})$

835)



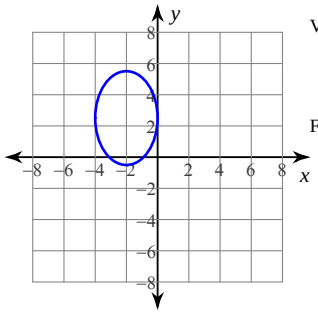
Vertices: $(-2, 7)$
$(-2, -5)$
Foci: $(-2, 1+3\sqrt{3})$
$(-2, 1-3\sqrt{3})$

836)



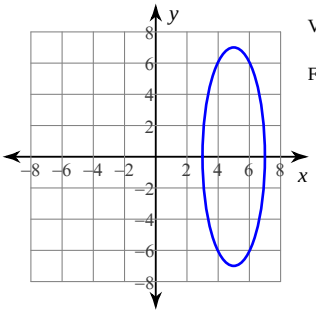
Vertices: $(-1, 7)$
$(-1, -7)$
Foci: $(-1, 2\sqrt{10})$
$(-1, -2\sqrt{10})$

837)



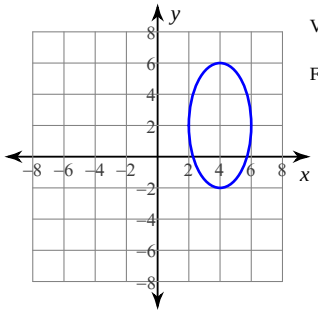
Vertices: $\left(-2, \frac{11}{2}\right)$
$\left(-2, -\frac{1}{2}\right)$
Foci: $\left(-2, \frac{2\sqrt{5}+5}{2}\right)$
$\left(-2, \frac{-2\sqrt{5}+5}{2}\right)$

838)



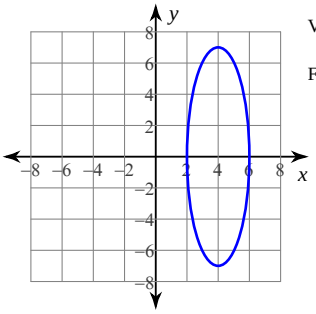
Vertices: $(5, 7)$
$(5, -7)$
Foci: $(5, 3\sqrt{5})$
$(5, -3\sqrt{5})$

839)



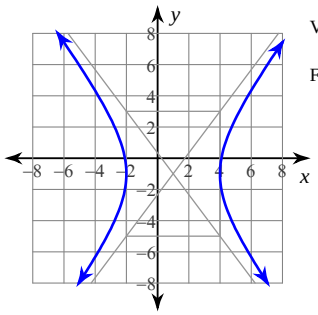
Vertices: $(4, 6)$
$(4, -2)$
Foci: $(4, 2 + 2\sqrt{3})$
$(4, 2 - 2\sqrt{3})$

840)



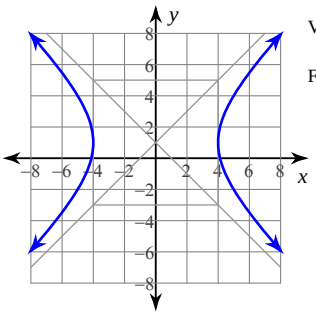
Vertices: $(4, 7)$
$(4, -7)$
Foci: $(4, 3\sqrt{5})$
$(4, -3\sqrt{5})$

841)



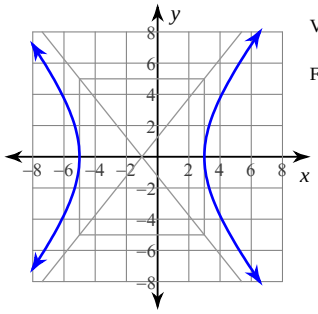
Vertices: $(4, -1)$
$(-2, -1)$
Foci: $(6, -1)$
$(-4, -1)$

842)



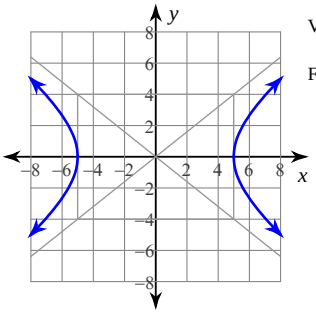
Vertices: $(4, 1)$
$(-4, 1)$
Foci: $(4\sqrt{2}, 1)$
$(-4\sqrt{2}, 1)$

843)



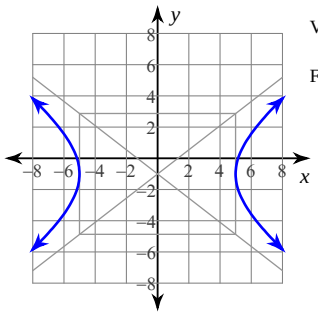
Vertices: $(3, 0)$
$(-5, 0)$
Foci: $(-1 + \sqrt{41}, 0)$
$(-1 - \sqrt{41}, 0)$

844)



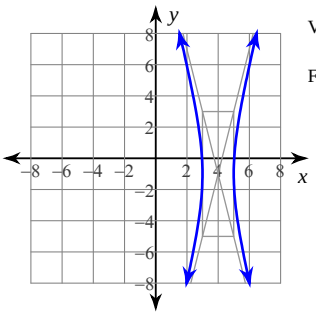
Vertices: $(5, 0)$
$(-5, 0)$
Foci: $(\sqrt{41}, 0)$
$(-\sqrt{41}, 0)$

845)



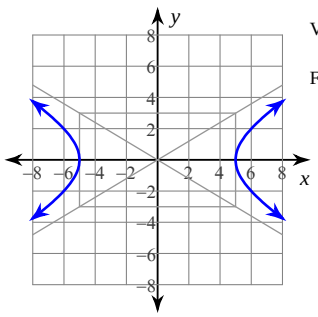
Vertices: $(5, -1)$
$(-5, -1)$
Foci: $(2\sqrt{10}, -1)$
$(-2\sqrt{10}, -1)$

846)



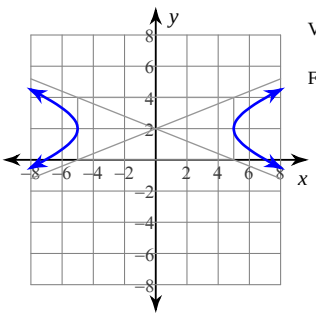
Vertices: $(5, -1)$
$(3, -1)$
Foci: $(4 + \sqrt{17}, -1)$
$(4 - \sqrt{17}, -1)$

847)



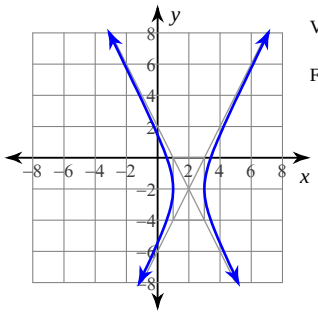
Vertices: $(5, 0)$
$(-5, 0)$
Foci: $(\sqrt{34}, 0)$
$(-\sqrt{34}, 0)$

848)



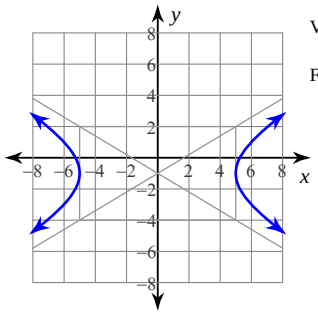
Vertices: $(5, 2)$
$(-5, 2)$
Foci: $(\sqrt{29}, 2)$
$(-\sqrt{29}, 2)$

849)



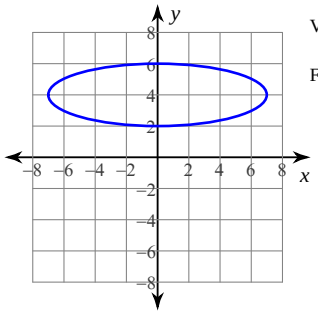
Vertices: $(3, -2)$
$(1, -2)$
Foci: $(2 + \sqrt{5}, -2)$
$(2 - \sqrt{5}, -2)$

850)



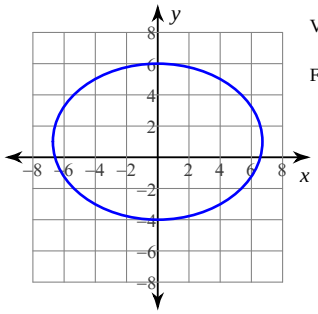
Vertices: $(5, -1)$
$(-5, -1)$
Foci: $(\sqrt{34}, -1)$
$(-\sqrt{34}, -1)$

851)



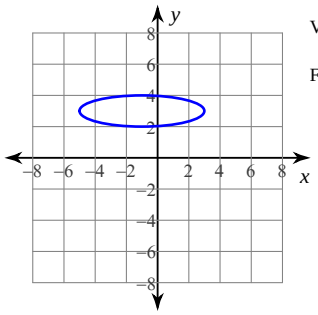
Vertices: $(7, 4)$
$(-7, 4)$
Foci: $(3\sqrt{5}, 4)$
$(-3\sqrt{5}, 4)$

852)



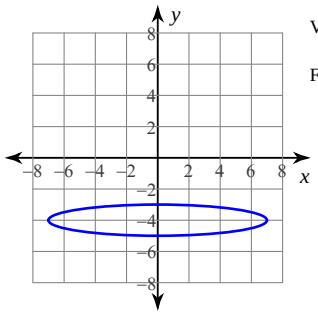
Vertices: $(3\sqrt{5}, 1)$
$(-3\sqrt{5}, 1)$
Foci: $(2\sqrt{5}, 1)$
$(-2\sqrt{5}, 1)$

853)



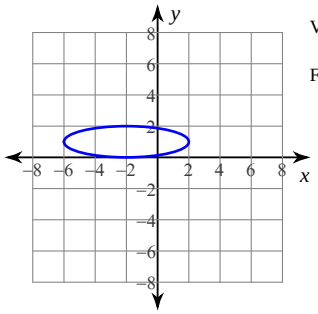
Vertices: $(3, 3)$
$(-5, 3)$
Foci: $(-1 + \sqrt{15}, 3)$
$(-1 - \sqrt{15}, 3)$

854)



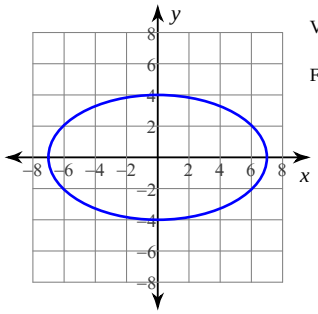
Vertices: $(7, -4)$
$(-7, -4)$
Foci: $(4\sqrt{3}, -4)$
$(-4\sqrt{3}, -4)$

855)



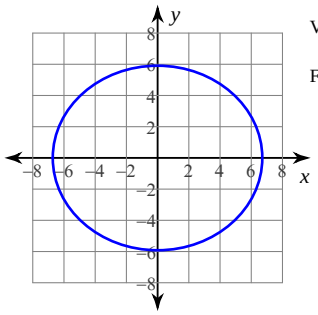
Vertices: $(2, 1)$
$(-6, 1)$
Foci: $(-2 + \sqrt{15}, 1)$
$(-2 - \sqrt{15}, 1)$

856)



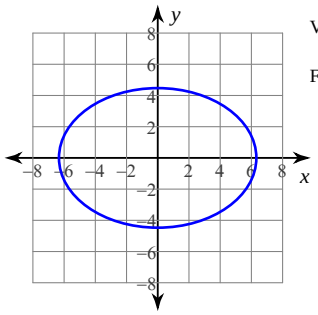
Vertices: $(7, 0)$
$(-7, 0)$
Foci: $(\sqrt{33}, 0)$
$(-\sqrt{33}, 0)$

857)



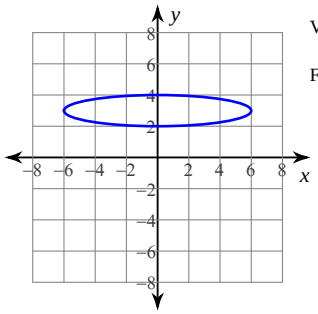
Vertices: $(3\sqrt{5}, 0)$
$(-3\sqrt{5}, 0)$
Foci: $(\sqrt{10}, 0)$
$(-\sqrt{10}, 0)$

858)



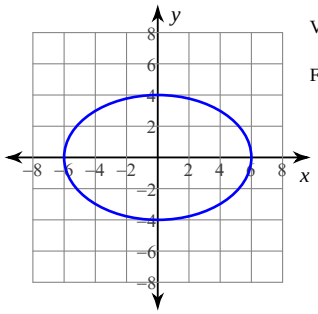
Vertices: $(2\sqrt{10}, 0)$
$(-2\sqrt{10}, 0)$
Foci: $(2\sqrt{5}, 0)$
$(-2\sqrt{5}, 0)$

859)



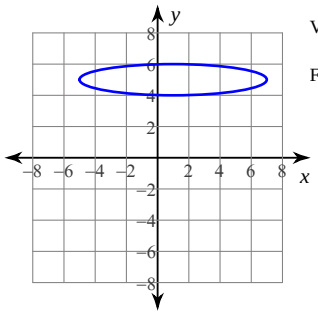
Vertices: $(6, 3)$
$(-6, 3)$
Foci: $(\sqrt{35}, 3)$
$(-\sqrt{35}, 3)$

860)



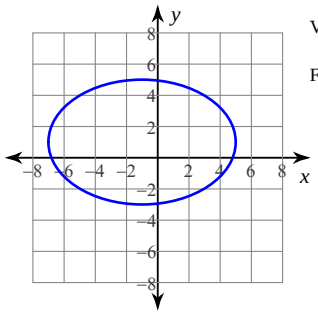
Vertices: $(6, 0)$
$(-6, 0)$
Foci: $(2\sqrt{5}, 0)$
$(-2\sqrt{5}, 0)$

861)



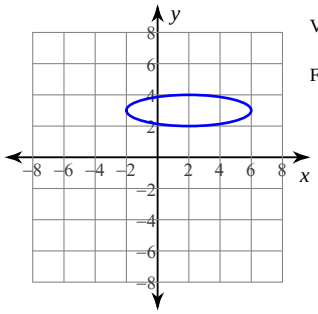
Vertices: $(7, 5)$
$(-5, 5)$
Foci: $(1 + \sqrt{35}, 5)$
$(1 - \sqrt{35}, 5)$

862)



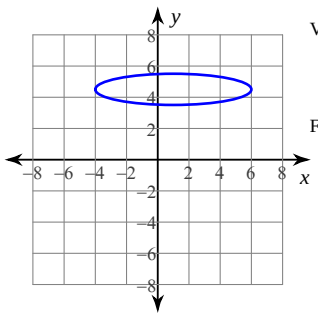
Vertices: $(5, 1)$
$(-7, 1)$
Foci: $(-1 + 2\sqrt{5}, 1)$
$(-1 - 2\sqrt{5}, 1)$

863)



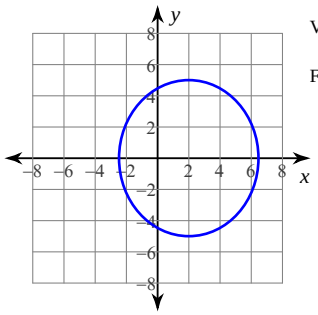
Vertices: $(6, 3)$
$(-2, 3)$
Foci: $(2 + \sqrt{15}, 3)$
$(2 - \sqrt{15}, 3)$

864)



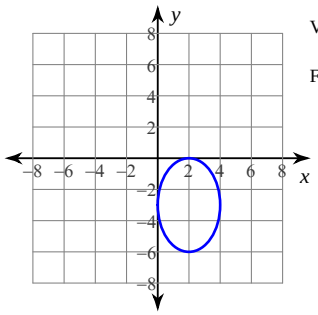
Vertices: $\left(6, \frac{9}{2}\right)$
$\left(-4, \frac{9}{2}\right)$
Foci: $\left(1 + 2\sqrt{6}, \frac{9}{2}\right)$
$\left(1 - 2\sqrt{6}, \frac{9}{2}\right)$

865)



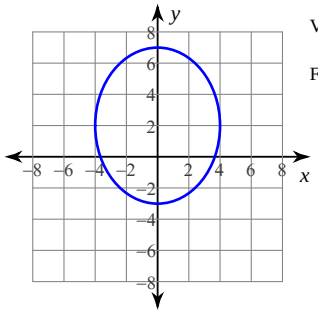
Vertices: $(2, 5)$
$(2, -5)$
Foci: $(2, \sqrt{5})$
$(2, -\sqrt{5})$

866)



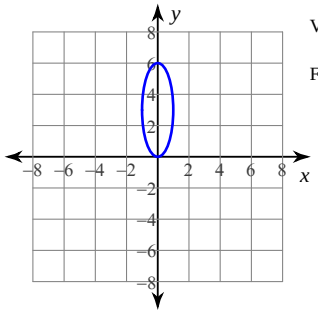
Vertices: $(2, 0)$
$(2, -6)$
Foci: $(2, -3 + \sqrt{5})$
$(2, -3 - \sqrt{5})$

867)



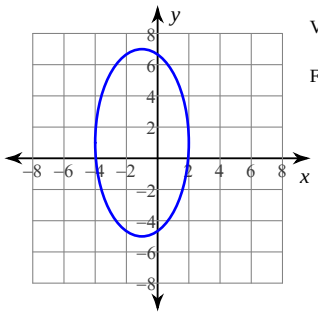
Vertices: $(0, 7)$
$(0, -3)$
Foci: $(0, 5)$
$(0, -1)$

868)



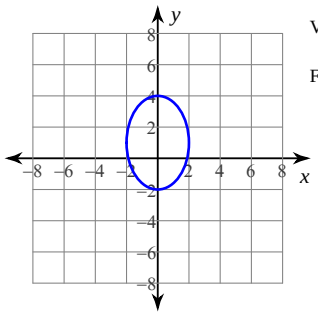
Vertices: $(0, 6)$
$(0, 0)$
Foci: $(0, 3 + 2\sqrt{2})$
$(0, 3 - 2\sqrt{2})$

869)



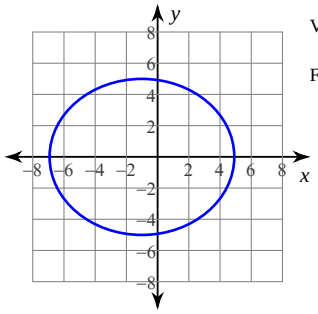
Vertices: $(-1, 7)$
$(-1, -5)$
Foci: $(-1, 1 + 3\sqrt{3})$
$(-1, 1 - 3\sqrt{3})$

870)



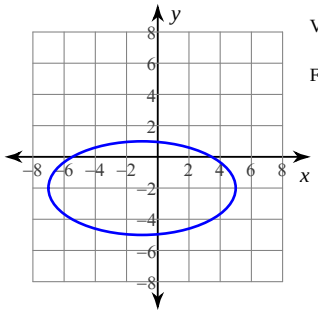
Vertices: $(0, 4)$
$(0, -2)$
Foci: $(0, 1 + \sqrt{5})$
$(0, 1 - \sqrt{5})$

871)



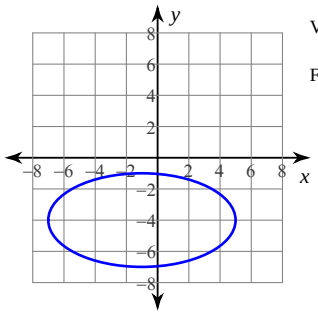
Vertices: $(-1 + \sqrt{35}, 0)$
$(-1 - \sqrt{35}, 0)$
Foci: $(-1 + \sqrt{10}, 0)$
$(-1 - \sqrt{10}, 0)$

872)



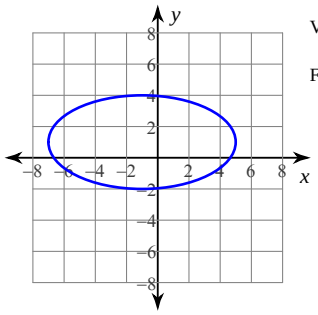
Vertices: $(5, -2)$
$(-7, -2)$
Foci: $(-1 + 3\sqrt{3}, -2)$
$(-1 - 3\sqrt{3}, -2)$

873)



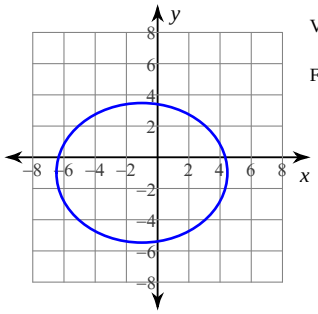
Vertices: $(5, -4)$
$(-7, -4)$
Foci: $(-1 + 3\sqrt{3}, -4)$
$(-1 - 3\sqrt{3}, -4)$

874)



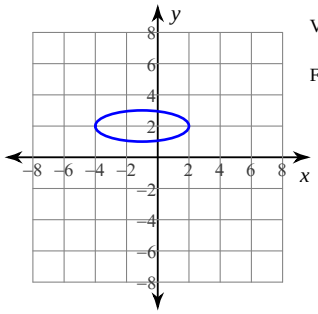
Vertices: $(5, 1)$
$(-7, 1)$
Foci: $(-1 + 3\sqrt{3}, 1)$
$(-1 - 3\sqrt{3}, 1)$

875)



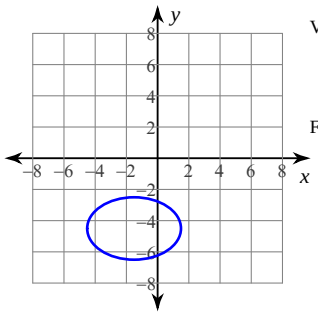
Vertices: $(-1 + \sqrt{30}, -1)$
$(-1 - \sqrt{30}, -1)$
Foci: $(-1 + \sqrt{10}, -1)$
$(-1 - \sqrt{10}, -1)$

876)



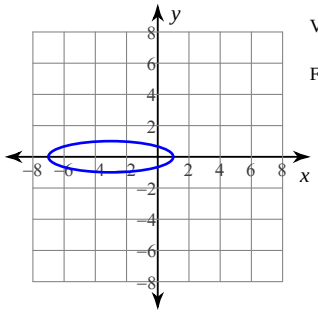
Vertices: $(2, 2)$
$(-4, 2)$
Foci: $(-1 + 2\sqrt{2}, 2)$
$(-1 - 2\sqrt{2}, 2)$

877)



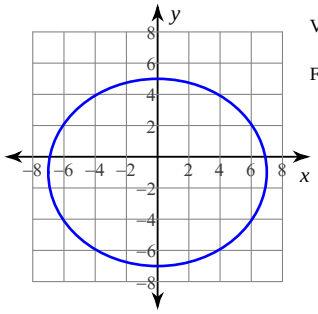
Vertices: $\left(\frac{3}{2}, -\frac{9}{2}\right)$
$\left(-\frac{9}{2}, -\frac{9}{2}\right)$
Foci: $\left(\frac{2\sqrt{5} - 3}{2}, -\frac{9}{2}\right)$
$\left(\frac{-2\sqrt{5} - 3}{2}, -\frac{9}{2}\right)$

878)



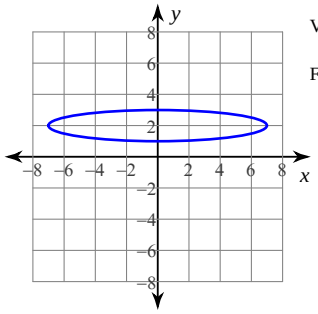
Vertices: $(1, 0)$
$(-7, 0)$
Foci: $(-3 + \sqrt{15}, 0)$
$(-3 - \sqrt{15}, 0)$

879)



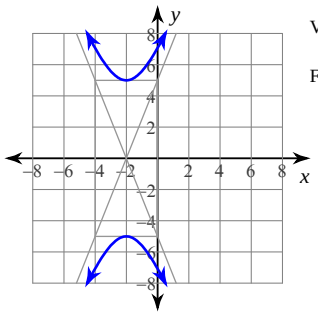
Vertices: $(7, -1)$
$(-7, -1)$
Foci: $(\sqrt{13}, -1)$
$(-\sqrt{13}, -1)$

880)



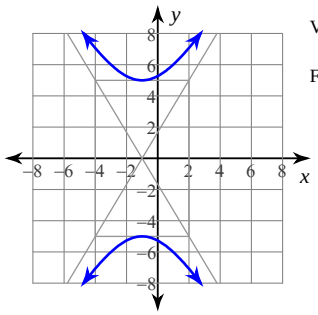
Vertices: $(7, 2)$
$(-7, 2)$
Foci: $(4\sqrt{3}, 2)$
$(-4\sqrt{3}, 2)$

881)



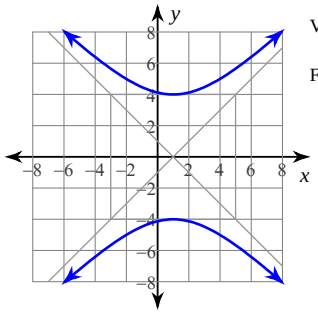
Vertices: $(-2, 5)$
$(-2, -5)$
Foci: $(-2, \sqrt{29})$
$(-2, -\sqrt{29})$

882)



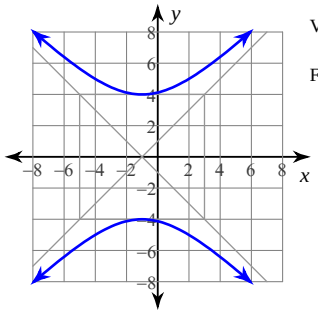
Vertices: $(-1, 5)$
$(-1, -5)$
Foci: $(-1, \sqrt{34})$
$(-1, -\sqrt{34})$

883)



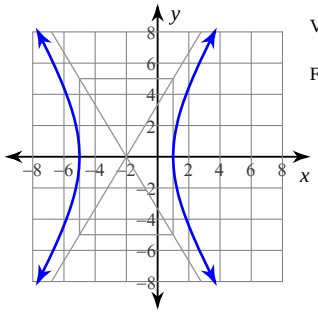
Vertices: $(1, 4)$
$(1, -4)$
Foci: $(1, 4\sqrt{2})$
$(1, -4\sqrt{2})$

884)



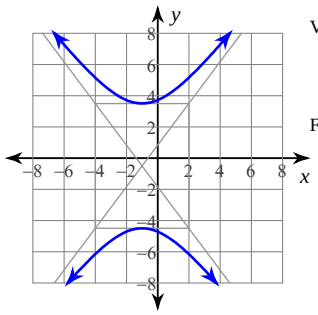
Vertices: $(-1, 4)$
$(-1, -4)$
Foci: $(-1, 4\sqrt{2})$
$(-1, -4\sqrt{2})$

885)



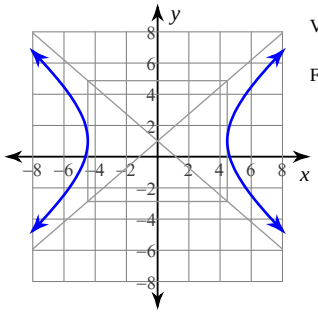
Vertices: $(1, 0)$
$(-5, 0)$
Foci: $(-2 + \sqrt{34}, 0)$
$(-2 - \sqrt{34}, 0)$

886)



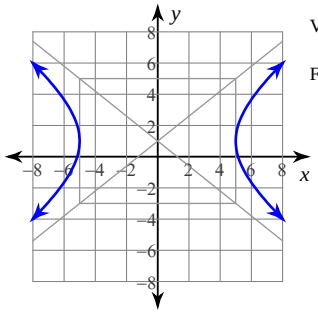
Vertices: $\left(-1, \frac{7}{2}\right)$
$\left(-1, -\frac{9}{2}\right)$
Foci: $\left(-1, \frac{9}{2}\right)$
$\left(-1, -\frac{11}{2}\right)$

887)



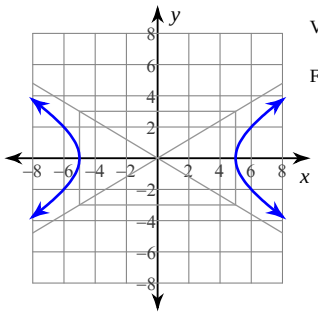
Vertices: $(2\sqrt{5}, 1)$
$(-2\sqrt{5}, 1)$
Foci: $(\sqrt{35}, 1)$
$(-\sqrt{35}, 1)$

888)



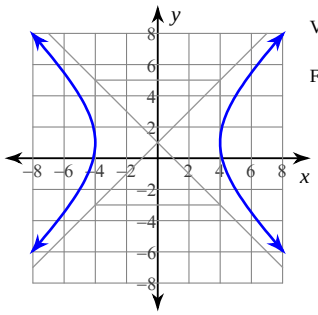
Vertices: $(5, 1)$
$(-5, 1)$
Foci: $(\sqrt{41}, 1)$
$(-\sqrt{41}, 1)$

889)



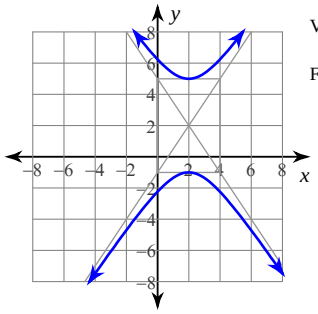
Vertices: $(5, 0)$
$(-5, 0)$
Foci: $(\sqrt{34}, 0)$
$(-\sqrt{34}, 0)$

890)



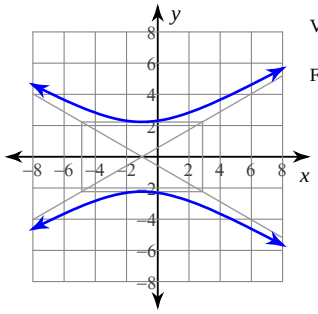
Vertices: $(4, 1)$
$(-4, 1)$
Foci: $(4\sqrt{2}, 1)$
$(-4\sqrt{2}, 1)$

891)



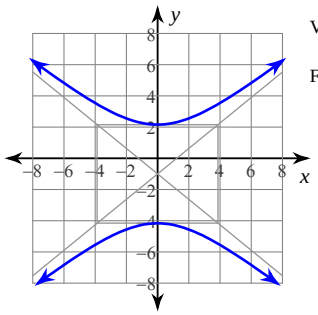
Vertices: $(2, 5)$
$(2, -1)$
Foci: $(2, 2 + \sqrt{13})$
$(2, 2 - \sqrt{13})$

892)



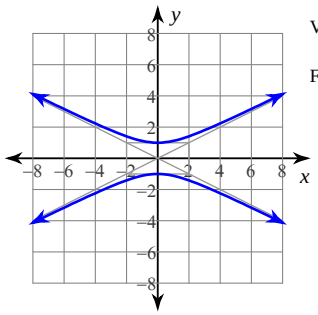
Vertices: $(-1, \sqrt{5})$
$(-1, -\sqrt{5})$
Foci: $(-1, 2\sqrt{5})$
$(-1, -2\sqrt{5})$

893)



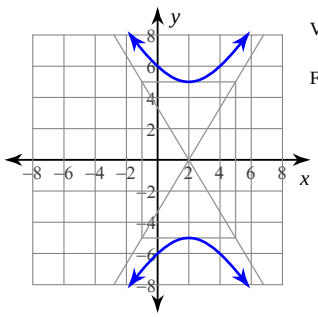
Vertices: $(0, -1 + \sqrt{10})$
$(0, -1 - \sqrt{10})$
Foci: $(0, 4)$
$(0, -6)$

894)



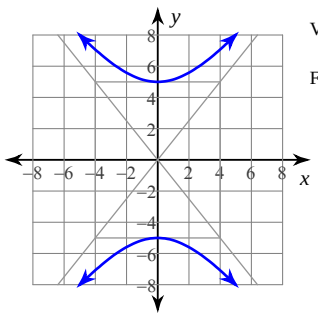
Vertices: $(0, 1)$
$(0, -1)$
Foci: $(0, \sqrt{5})$
$(0, -\sqrt{5})$

895)



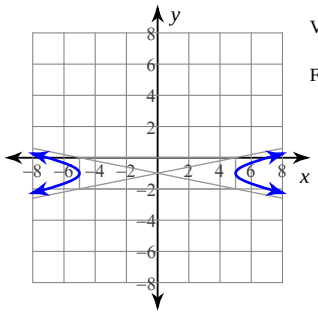
Vertices: $(2, 5)$
$(2, -5)$
Foci: $(2, \sqrt{34})$
$(2, -\sqrt{34})$

896)



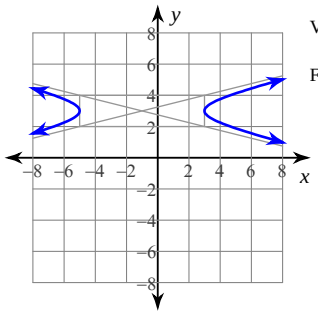
Vertices: $(0, 5)$
$(0, -5)$
Foci: $(0, \sqrt{41})$
$(0, -\sqrt{41})$

897)



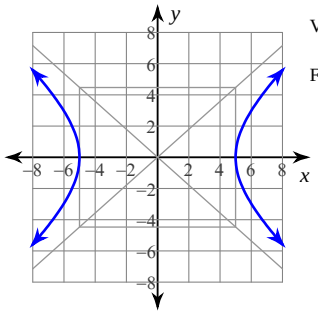
Vertices: $(5, -1)$
$(-5, -1)$
Foci: $(\sqrt{26}, -1)$
$(-\sqrt{26}, -1)$

898)



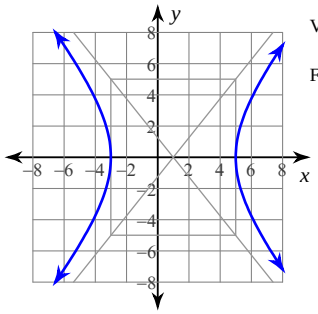
Vertices: $(3, 3)$
$(-5, 3)$
Foci: $(-1 + \sqrt{17}, 3)$
$(-1 - \sqrt{17}, 3)$

899)



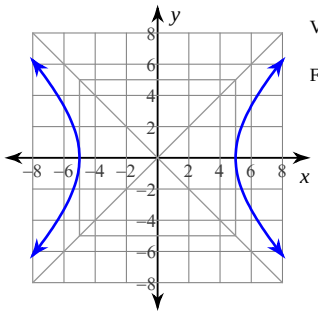
Vertices: $(5, 0)$
$(-5, 0)$
Foci: $(3\sqrt{5}, 0)$
$(-3\sqrt{5}, 0)$

900)



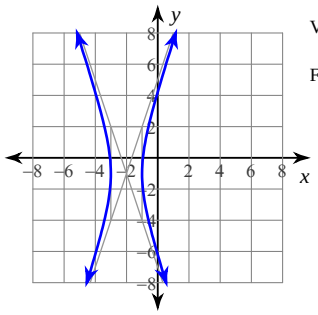
Vertices: $(5, 0)$
$(-3, 0)$
Foci: $(1 + \sqrt{41}, 0)$
$(1 - \sqrt{41}, 0)$

901)



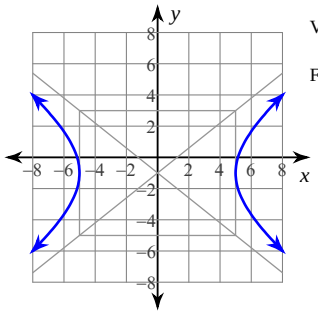
Vertices: $(5, 0)$
$(-5, 0)$
Foci: $(5\sqrt{2}, 0)$
$(-5\sqrt{2}, 0)$

902)



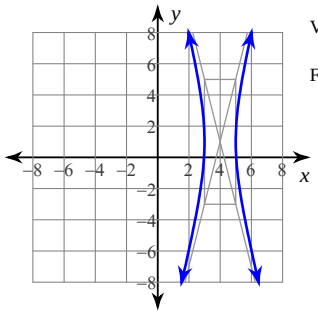
Vertices: $(-1, -1)$
$(-3, -1)$
Foci: $(-2 + \sqrt{10}, -1)$
$(-2 - \sqrt{10}, -1)$

903)



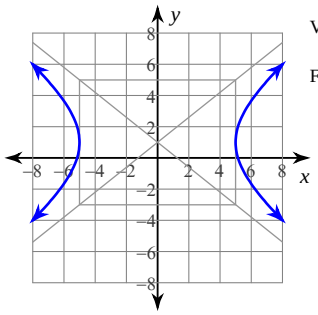
Vertices: $(5, -1)$
$(-5, -1)$
Foci: $(\sqrt{41}, -1)$
$(-\sqrt{41}, -1)$

904)



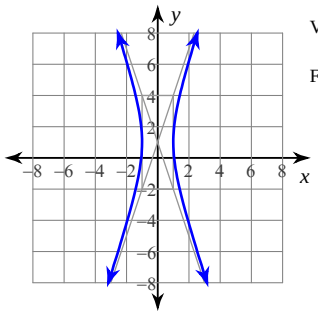
Vertices: $(5, 1)$
$(3, 1)$
Foci: $(4 + \sqrt{17}, 1)$
$(4 - \sqrt{17}, 1)$

905)



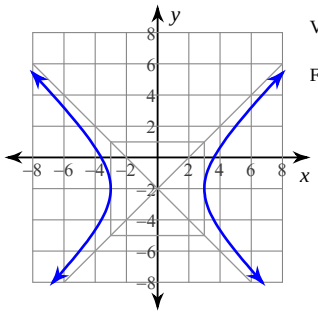
Vertices: $(5, 1)$
$(-5, 1)$
Foci: $(\sqrt{41}, 1)$
$(-\sqrt{41}, 1)$

906)



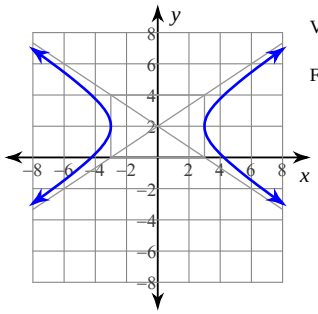
Vertices: $(1, 1)$
$(-1, 1)$
Foci: $(\sqrt{10}, 1)$
$(-\sqrt{10}, 1)$

907)



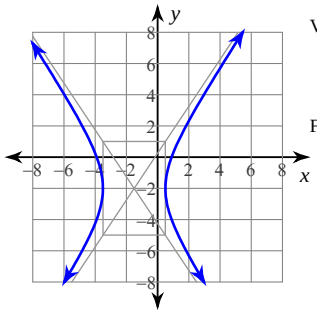
Vertices: $(3, -2)$
$(-3, -2)$
Foci: $(3\sqrt{2}, -2)$
$(-3\sqrt{2}, -2)$

908)



Vertices: $(3, 2)$
$(-3, 2)$
Foci: $(\sqrt{13}, 2)$
$(-\sqrt{13}, 2)$

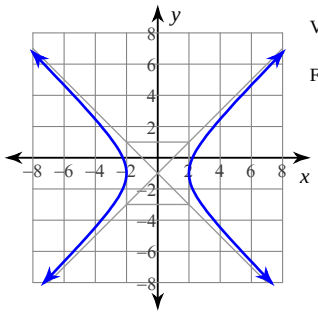
909)



Vertices: $\left(\frac{1}{2}, -2\right)$ $\left(-\frac{7}{2}, -2\right)$

Foci: $\left(\frac{2\sqrt{13}-3}{2}, -2\right)$ $\left(\frac{-2\sqrt{13}-3}{2}, -2\right)$

910)



Vertices: $(2, -1)$ $(-2, -1)$

Foci: $(2\sqrt{2}, -1)$ $(-2\sqrt{2}, -1)$

911) $\frac{(x+4)^2}{81} + \frac{(y-7)^2}{196} = 1$

912) $\frac{(x-4)^2}{4} + \frac{(y-1)^2}{25} = 1$

913) $\frac{\left(x-\frac{5}{2}\right)^2}{64} + \frac{(y+8)^2}{121} = 1$

914) $\frac{(x-9)^2}{36} + \frac{(y-4)^2}{81} = 1$

915) $\frac{(x+10)^2}{121} + \frac{(y-7)^2}{49} = 1$

916) $\frac{(x+8)^2}{16} + \frac{(y-8)^2}{100} = 1$

917) $\frac{(x+3)^2}{81} + \frac{(y+10)^2}{4} = 1$

918) $\frac{(x-6)^2}{175} + \frac{(y-6)^2}{140} = 1$

919) $\frac{(x-5)^2}{145} + \frac{(y+6)^2}{125} = 1$

920) $\frac{(x-9)^2}{100} + \frac{(y+7)^2}{25} = 1$

921) $\frac{(x+2)^2}{49} + \frac{(y+6)^2}{64} = 1$

922) $(x-6)^2 + \frac{(y+3)^2}{36} = 1$

923) $\frac{(x+10)^2}{16} + \frac{y^2}{36} = 1$

924) $\frac{(x-2)^2}{25} + \frac{(y+10)^2}{40} = 1$

925) $\frac{(x+6)^2}{9} + \frac{(y-3)^2}{36} = 1$

926) $\frac{(x-7)^2}{100} + \frac{(y-1)^2}{144} = 1$

927) $\frac{\left(x-\frac{15}{2}\right)^2}{4} + \frac{(y-7)^2}{36} = 1$

928) $\frac{(x+10)^2}{81} + \frac{(y-4)^2}{169} = 1$

929) $\frac{(x-3)^2}{9} + \frac{(y-10)^2}{25} = 1$

930) $\frac{(x+5)^2}{169} + \frac{(y-7)^2}{121} = 1$

931) $\frac{(y+3)^2}{64} - \frac{(x+7)^2}{25} = 1$

932) $\frac{(x-2)^2}{49} - \frac{(y+9)^2}{121} = 1$

933) $\frac{y^2}{81} - \frac{(x+2)^2}{16} = 1$

934) $\frac{(y+3)^2}{100} - \frac{(x+10)^2}{81} = 1$

935) $\frac{(y-3)^2}{49} - \frac{(x-2)^2}{64} = 1$

936) $\frac{\left(y-\frac{5}{2}\right)^2}{100} - \frac{\left(x-\frac{1}{2}\right)^2}{144} = 1$

937) $\frac{(y-1)^2}{121} - \frac{(x+6)^2}{64} = 1$

938) $\frac{(y-4)^2}{169} - \frac{(x+2)^2}{121} = 1$

939) $\frac{(y-6)^2}{36} - \frac{(x-7)^2}{36} = 1$

940) $\frac{(y-9)^2}{49} - \frac{(x+10)^2}{25} = 1$

941) $\frac{(y-2)^2}{64} - \frac{(x-1)^2}{121} = 1$

942) $\frac{(x-10)^2}{36} - \frac{(y+6)^2}{225} = 1$

943) $\frac{(y+3)^2}{36} - \frac{(x+7)^2}{64} = 1$

944) $\frac{(y-3)^2}{64} - (x-6)^2 = 1$

945) $\frac{y^2}{16} - \frac{(x+2)^2}{64} = 1$

946) $\frac{(y-6)^2}{144} - \frac{(x-10)^2}{25} = 1$

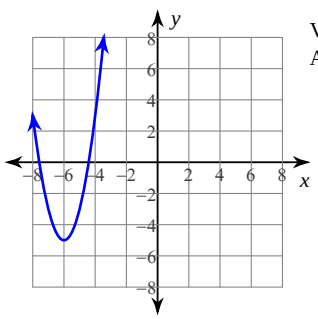
947) $\frac{(y-4)^2}{9} - \frac{(x-2)^2}{100} = 1$

948) $\frac{(y+5)^2}{100} - \frac{(x+7)^2}{16} = 1$

949) $\frac{(y-7)^2}{9} - \frac{(x-7)^2}{81} = 1$

950) $\frac{(y+9)^2}{121} - \frac{(x+2)^2}{36} = 1$

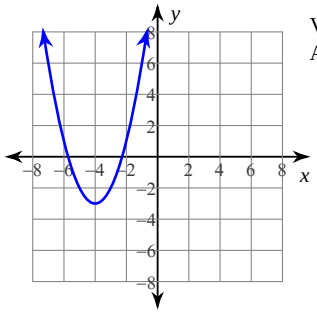
951)



Vertex: $(-6, -5)$

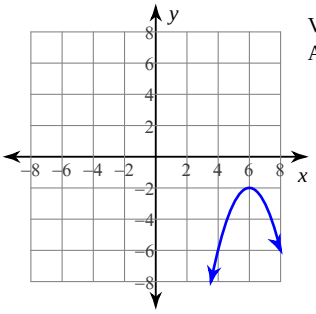
Axis of Sym.: $x = -6$

952)



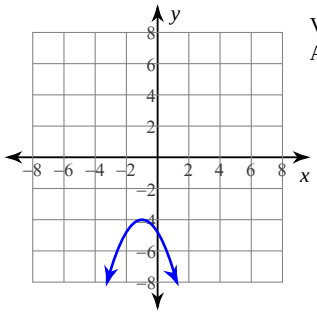
Vertex: $(-4, -3)$
Axis of Sym.: $x = -4$

953)



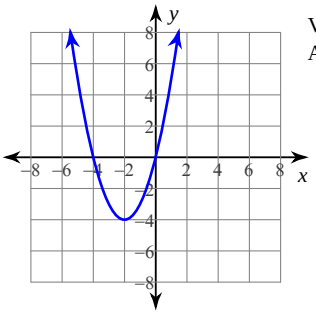
Vertex: $(6, -2)$
Axis of Sym.: $x = 6$

954)



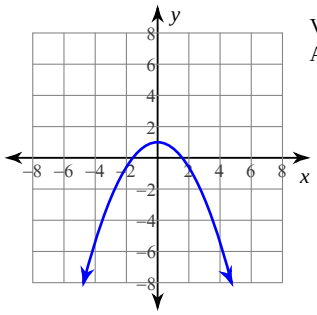
Vertex: $(-1, -4)$
Axis of Sym.: $x = -1$

955)



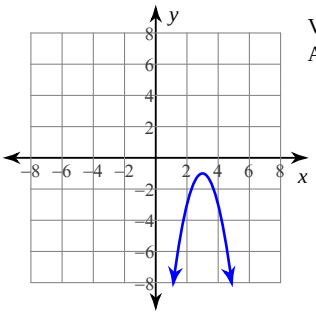
Vertex: $(-2, -4)$
Axis of Sym.: $x = -2$

956)



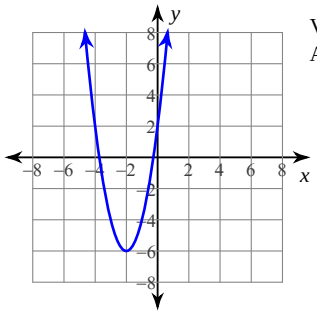
Vertex: $(0, 1)$
Axis of Sym.: $x = 0$

957)



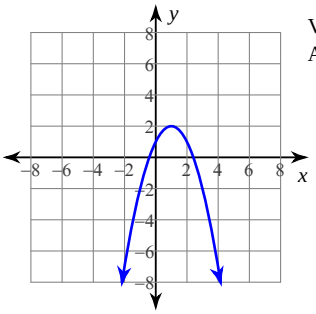
Vertex: $(3, -1)$
Axis of Sym.: $x = 3$

958)



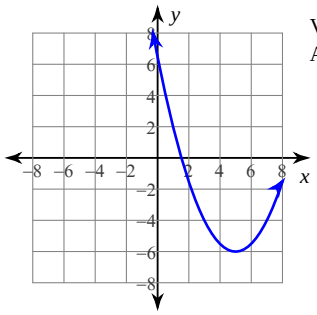
Vertex: $(-2, -6)$
Axis of Sym.: $x = -2$

959)



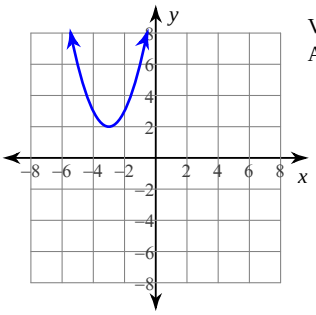
Vertex: $(1, 2)$
Axis of Sym.: $x = 1$

960)



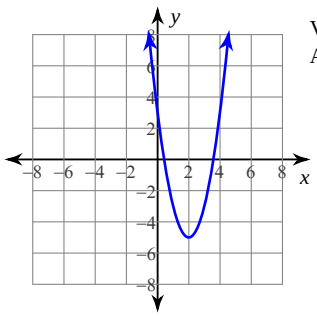
Vertex: $(5, -6)$
Axis of Sym.: $x = 5$

961)



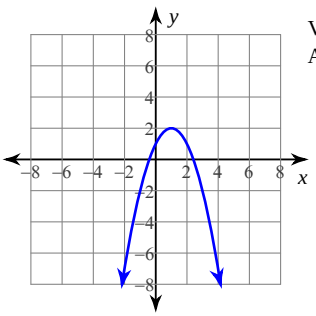
Vertex: $(-3, 2)$
Axis of Sym.: $x = -3$

962)



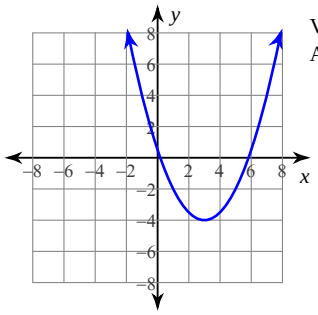
Vertex: $(2, -5)$
Axis of Sym.: $x = 2$

963)



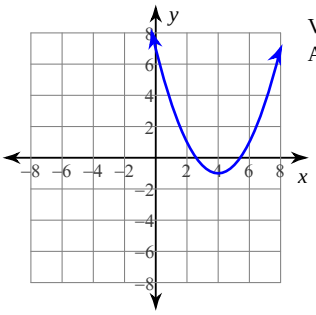
Vertex: $(1, 2)$
Axis of Sym.: $x = 1$

964)



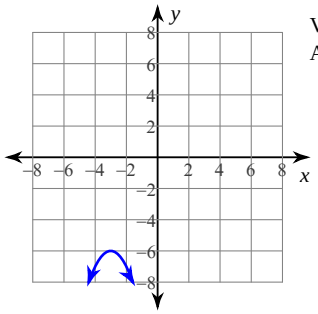
Vertex: $(3, -4)$
Axis of Sym.: $x = 3$

965)



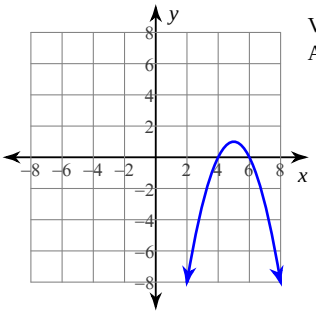
Vertex: $(4, -1)$
Axis of Sym.: $x = 4$

966)



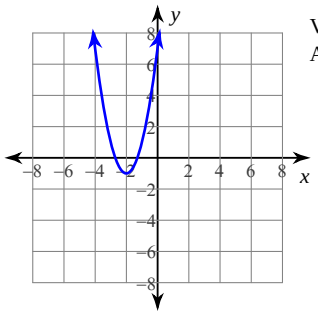
Vertex: $(-3, -6)$
Axis of Sym.: $x = -3$

967)



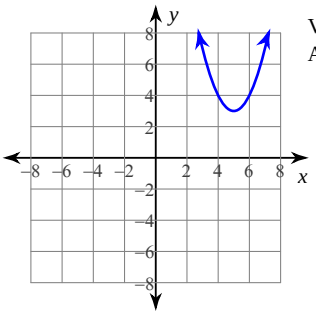
Vertex: $(5, 1)$
Axis of Sym.: $x = 5$

968)



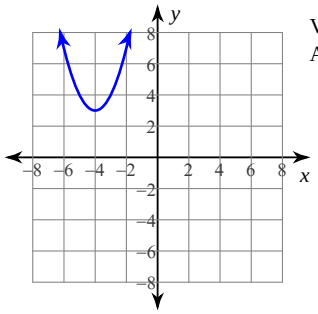
Vertex: $(-2, -1)$
Axis of Sym.: $x = -2$

969)



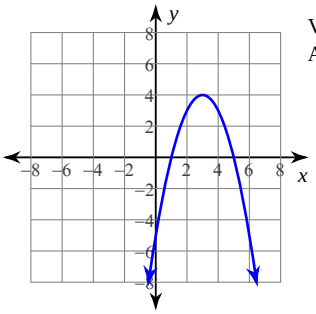
Vertex: $(5, 3)$
Axis of Sym.: $x = 5$

970)



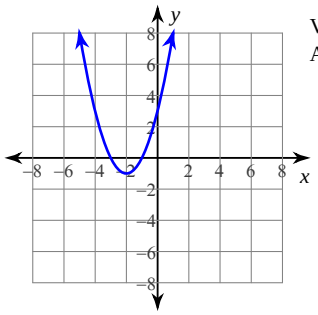
Vertex: $(-4, 3)$
Axis of Sym.: $x = -4$

971)



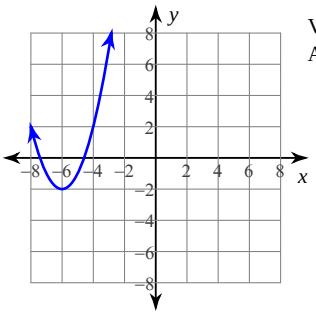
Vertex: $(3, 4)$
Axis of Sym.: $x = 3$

972)



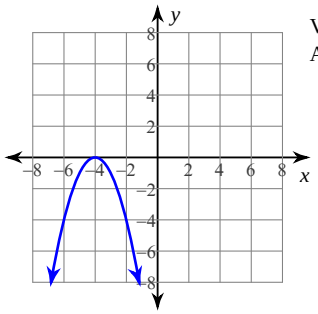
Vertex: $(-2, -1)$
Axis of Sym.: $x = -2$

973)



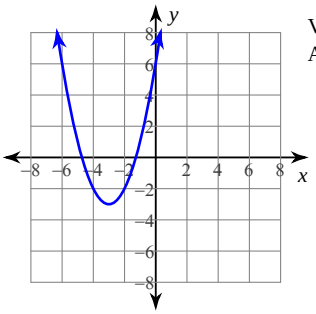
Vertex: $(-6, -2)$
Axis of Sym.: $x = -6$

974)



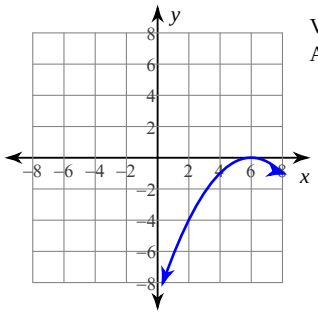
Vertex: $(-4, 0)$
Axis of Sym.: $x = -4$

975)



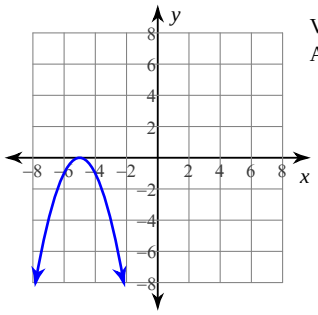
Vertex: $(-3, -3)$
Axis of Sym.: $x = -3$

976)



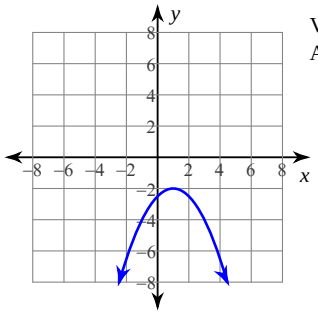
Vertex: $(6, 0)$
Axis of Sym.: $x = 6$

977)



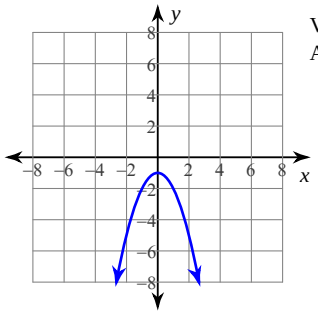
Vertex: $(-5, 0)$
Axis of Sym.: $x = -5$

978)



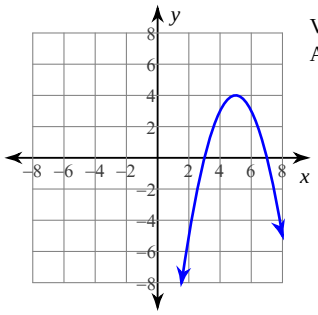
Vertex: $(1, -2)$
Axis of Sym.: $x = 1$

979)



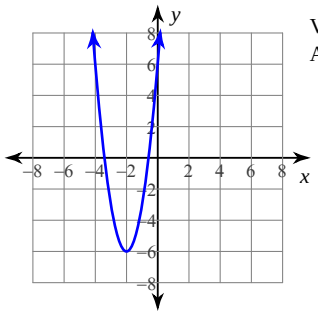
Vertex: $(0, -1)$
Axis of Sym.: $x = 0$

980)



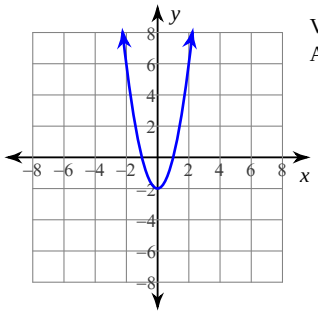
Vertex: $(5, 4)$
Axis of Sym.: $x = 5$

981)



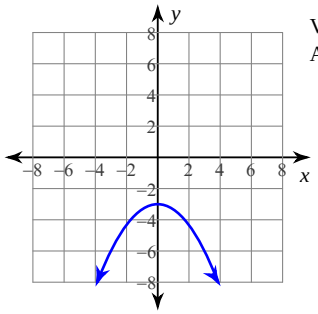
Vertex: $(-2, -6)$
Axis of Sym.: $x = -2$

982)



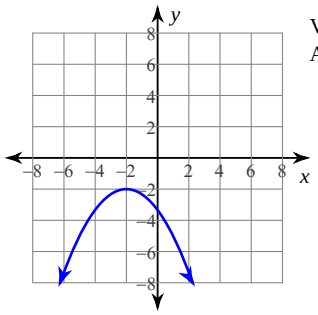
Vertex: $(0, -2)$
Axis of Sym.: $x = 0$

983)



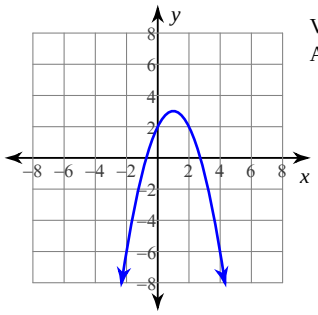
Vertex: $(0, -3)$
Axis of Sym.: $x = 0$

984)



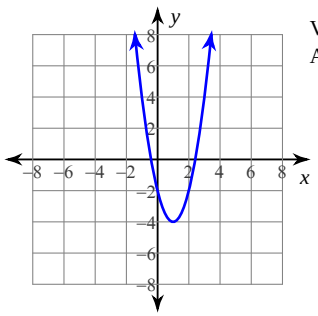
Vertex: $(-2, -2)$
Axis of Sym.: $x = -2$

985)



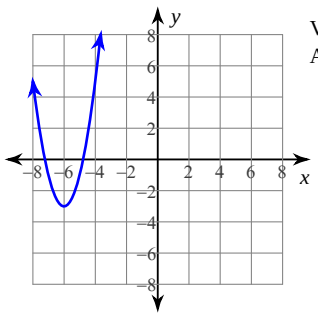
Vertex: $(1, 3)$
Axis of Sym.: $x = 1$

986)



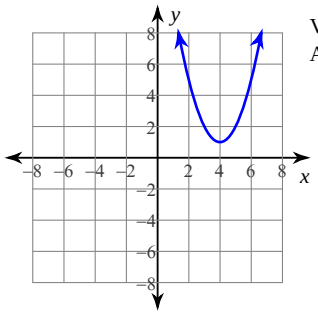
Vertex: $(1, -4)$
Axis of Sym.: $x = 1$

987)



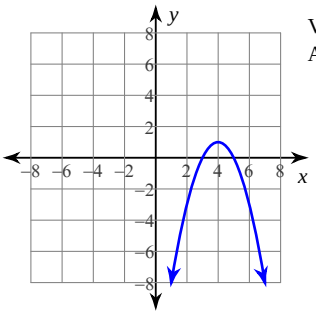
Vertex: $(-6, -3)$
Axis of Sym.: $x = -6$

988)



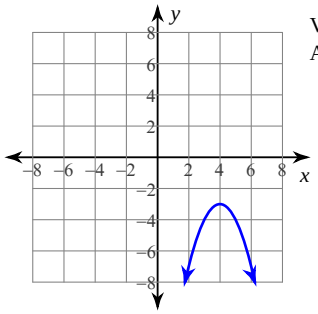
Vertex: $(4, 1)$
Axis of Sym.: $x = 4$

989)



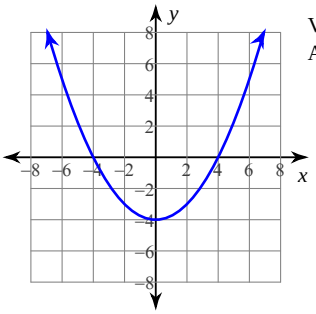
Vertex: $(4, 1)$
Axis of Sym.: $x = 4$

990)



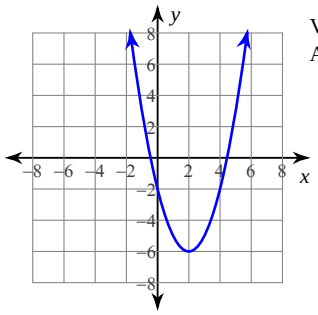
Vertex: $(4, -3)$
Axis of Sym.: $x = 4$

991)



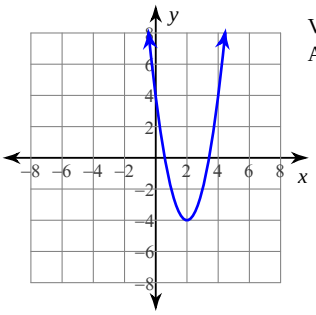
Vertex: $(0, -4)$
Axis of Sym.: $x = 0$

992)



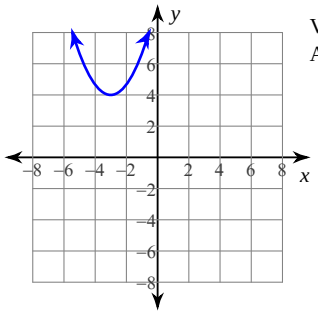
Vertex: $(2, -6)$
Axis of Sym.: $x = 2$

993)



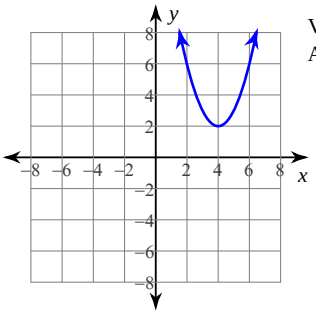
Vertex: $(2, -4)$
Axis of Sym.: $x = 2$

994)



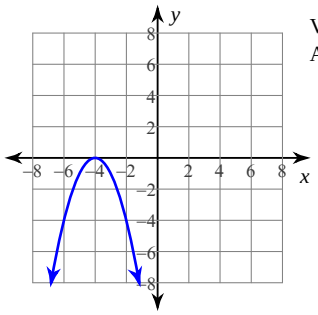
Vertex: $(-3, 4)$
Axis of Sym.: $x = -3$

995)



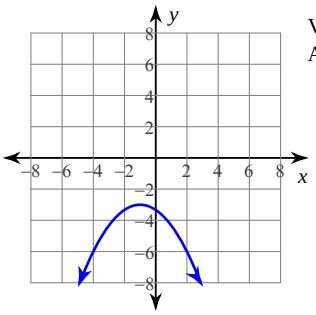
Vertex: $(4, 2)$
Axis of Sym.: $x = 4$

996)



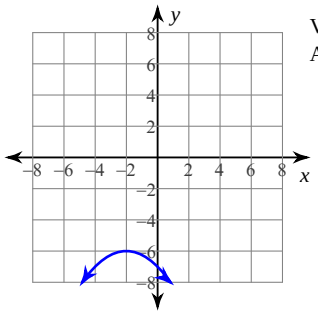
Vertex: $(-4, 0)$
Axis of Sym.: $x = -4$

997)



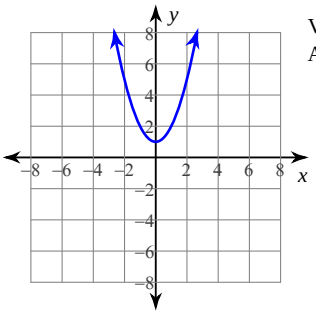
Vertex: $(-1, -3)$
Axis of Sym.: $x = -1$

998)

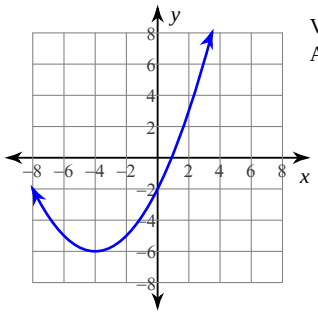


Vertex: $(-2, -6)$
Axis of Sym.: $x = -2$

999)



Vertex: $(0, 1)$
Axis of Sym.: $x = 0$

1000) 

Vertex: $(-4, -6)$
Axis of Sym.: $x = -4$

1001) $y = (x-6)^2 - 5$

1002) $y = -2(x+4)^2 - 9$

1003) $y = -3(x-6)^2 - 6$

1004) $y = -(x-3)^2 - 3$

1005) $y = -11(x+2)^2 - 4$

1006) $y = 7(x+3)^2 - 3$

1007) $y = -\frac{1}{2}(x+10)^2 + 6$

1008) $y = 2x^2$

1009) $y = -(x+10)^2 - 4$

1010) $y = -\frac{1}{3}(x+1)^2 - 3$

1011) $y = -(x-8)^2 - 2$

1012) $y = -3(x+2)^2 + 2$

1013) $y = -20(x+8)^2 - 4$

1014) $y = 8(x-5)^2 - 9$

1015) $y = 2(x-5)^2 + 1$

1016) $y = (x+5)^2 + 4$

1017) $y = -3(x-2)^2 + 3$

1018) $y = -2(x+8)^2 + 7$

1019) $y = (x-2)^2 - 10$

1020) $y = -\frac{1}{4}(x-8)^2 - 9$

1021) $(0, -7)$

1022) No solution.

1023) No solution.

1024) No solution.

1025) $(-4, 0), (-4, -2)$

1026) $(-10, -1), (7, 1), (7, -3)$

1027) $(-1, -1), (5, -4), (-7, -4)$

1028) $(10, 4), (2, 4), (9, 5), (3, 5)$

1029) $(-6, -1), (-2, 4), (-2, -6)$

1030) $(8, -2), (8, -4), (-3, 1), (-3, -7)$

1031) $(1, -3), (8, 10), (-6, 10)$

1032) $(6, 3), (6, 1), (0, 3), (0, 1)$

1033) $(-1, 10), (-1, 6), (10, 10), (10, 6)$

1034) $(-8, 5)$

1035) $(-10, 1), (-10, -9), (-1, 1), (-1, -9)$

1036) $(8, 3), (8, 9)$

1037) $(2, -1)$

1038) $(-2, 10), (-2, -2)$

1039) $(3, -1), (3, -7)$

1040) $(-2, -1), (2, -8), (-6, -8)$

1041) $(7, 1), (7, -7)$

1042) $(3, -7), (3, 4)$

1043) $(-6, -2), (-2, 4), (-10, 4)$

1044) $(2, 3), (-9, 10), (-9, -4)$

1045) $(6, 5), (7, 0), (5, 0)$

1046) $(1, -3), (-9, -3), (2, 0), (-10, 0)$

1047) $(0, 8), (0, 6), (-6, 9), (-6, 5)$

1048) $(0, 4)$

1049) $(9, 7)$

1050) $(-4, -1)$

1051) $(x-2)(x+4)(x^2+6x-2) = 0$

1052) $(x-1)(x+4)(x^2+4x-13) = 0$

1053) $(x+1)(x-5)(x^2+2x+2) = 0$

1054) $(x+3)(x-5)(x^2+2x+17) = 0$

1055) $(x+4)(x-4)(x^2-2x+10) = 0$

1056) $(x-4)^2(x^2-2x+10) = 0$

1057) $(x-2)^2(x^2-6x+3) = 0$

1058) $(x-3)^2(x^2-4x+2) = 0$

1059) $(x+1)(x-1)(x^2-8x+1) = 0$

1060) $(x+2)(x+1)(x^2-6x-30) = 0$

1061) $(x+2)^2(x^2-4x-1) = 0$

1062) $(x+4)(x+2)(x^2-6x-4) = 0$

1063) $(x-5)(x+4)(x^2-8x-3) = 0$

1064) $(x-4)(x+4)(x^2-8x+13) = 0$

1065) $(x-2)(x+5)(x^2+6x+10) = 0$

1066) $(x+5)(x-1)(x^2-8x+20) = 0$

1067) $x(x-5)^2(x^2+2x+2) = 0$

1068) $x(x-5)(x+2)(x^2-2x-18) = 0$

1069) $x(x-2)(x+5)(x^2+4x+13) = 0$

1070) $x(x-3)(x-2)(x^2-8x+32) = 0$

1071) $(-5, 3)$

1072) $\left(\frac{3}{2}, \frac{1}{3}\right)$

1073) $(0, -5)$

1074) $\left(-\frac{13}{6}, -\frac{1}{3}\right)$

1075) $(-1, 4)$

1076) $(-5, 0)$

1077) $\left(\frac{8}{7}, -\frac{1}{7}\right)$

1078) $(-4, -6)$

1079) $(1, 0)$

1080) $(1, 5)$

1081) $(2, -1)$

1082) $\left(\frac{2}{3}, \frac{22}{3}\right)$

1083) $(-4, -5)$

1084) $(6, 4)$

1085) $(-3, 1)$

1086) $\left(23, \frac{17}{2}\right)$

1087) $\left(-\frac{5}{11}, -\frac{26}{11}\right)$

1088) $(-3, 1)$

1089) $(5, 0)$

1090) $\left(-1, \frac{3}{2}\right)$

1091) -225°

1092) $-\frac{2\pi}{3}$

1093) 240°

1094) -350°

1095) -630°

1096) -810°

1097) 35°

1098) $-\frac{11\pi}{18}$

1099) -330°

1100) $\frac{205\pi}{36}$

1101) 330°

1102) 700°

1103) -265°

1104) 170°

1105) -65°

1106) $\frac{9\pi}{4}$

1107) $-\frac{103\pi}{18}$

1108) $-\frac{5\pi}{4}$

1109) $-\frac{17\pi}{4}$

1110) 60°

1111) $\frac{5\pi}{6}$

1112) $-\frac{5\pi}{6}$

1113) 120°

1114) $\frac{2\pi}{3}$

1115) $\frac{4\pi}{3}$

1116) 150°

1117) -140°

1118) $\frac{59\pi}{18}$

1119) 40°

1120) $-\frac{23\pi}{6}$

1121) 345°

1122) $\frac{7\pi}{6}$

1123) 390°

1124) 90°

1125) $\frac{5\pi}{2}$

1126) -330°

1127) -45°

1128) 45°

1129) $\frac{\pi}{4}$

1130) $\frac{\pi}{6}$

1131) Possible # positive real zeros: 1
Possible # negative real zeros: 4, 2, or 0

1132) Possible # positive real zeros: 0
Possible # negative real zeros: 5, 3, or 1

1133) Possible # positive real zeros: 1
Possible # negative real zeros: 1

1134) Possible # positive real zeros: 2 or 0
Possible # negative real zeros: 2 or 0

1135) Possible # positive real zeros: 1
Possible # negative real zeros: 1

1136) Possible # positive real zeros: 5, 3, or 1
Possible # negative real zeros: 0

1137) Possible # positive real zeros: 4, 2, or 0
Possible # negative real zeros: 1

1138) Possible # positive real zeros: 1
Possible # negative real zeros: 1

1139) Possible # positive real zeros: 0
Possible # negative real zeros: 2 or 0

1140) Possible # positive real zeros: 1
Possible # negative real zeros: 1

1141) Possible # positive real zeros: 1
Possible # negative real zeros: 1

1142) Possible # positive real zeros: 4, 2, or 0
Possible # negative real zeros: 1

1143) Possible # positive real zeros: 2 or 0
Possible # negative real zeros: 2 or 0

1144) Possible # positive real zeros: 1
Possible # negative real zeros: 1

1145) Possible # positive real zeros: 1
Possible # negative real zeros: 4, 2, or 0

1146) Possible # positive real zeros: 4, 2, or 0
Possible # negative real zeros: 1

1147) Possible # positive real zeros: 1
Possible # negative real zeros: 1

1148) Possible # positive real zeros: 1
Possible # negative real zeros: 1

1149) Possible # positive real zeros: 1
Possible # negative real zeros: 4, 2, or 0

1150) Possible # positive real zeros: 0
Possible # negative real zeros: 5, 3, or 1

1151) −5

1152) −32

1153) −13

1154) 6

1155) −12

1156) −10

1157) 10

1158) 8

1159) 2

1160) 1

1161) −4

1162) 0

1163) 0

1164) 12

1165) −3

1166) 5

1167) −1

1168) 14

1169) 10

1170) 30

1171) −8; two imaginary solutions

1172) 0; one real solution

1173) −16; two imaginary solutions

1174) −111; two imaginary solutions

1175) −84; two imaginary solutions

1176) 16; two real solutions

1177) 361; two real solutions

1178) 100; two real solutions

1179) 0; one real solution

1180) 289; two real solutions

1181) 81; two real solutions

1182) 1; two real solutions

1183) 0; one real solution

1184) 0; one real solution

1185) 0; one real solution

1186) 0; one real solution 1187) −3; two imaginary solutions 1188) 0; one real solution

1189) −311; two imaginary solutions 1190) 25; two real solutions

1191) $10v^2 + 10v - 7 + \frac{6}{v-3}$ 1192) $x^2 - 7x + 5 - \frac{9}{x+3}$ 1193) $n^2 - 2n - 3 + \frac{10}{n-4}$

1194) $4a^2 - 6a - 4 - \frac{10}{a+6}$ 1195) $k^2 + 10k - 8 + \frac{8}{k-6}$ 1196) $p^2 + p - 3$

1197) $7x^2 - 7x - 5 + \frac{5}{x+2}$ 1198) $n^2 + 6n + 1 + \frac{10}{n-9}$ 1199) $p^2 + 10p + 4 - \frac{1}{p-1}$

1200) $m^2 - 3m - 2 - \frac{6}{m+1}$ 1201) $a^2 - 9a - 8 + \frac{4}{a-1}$ 1202) $n^2 + 7n - 8 + \frac{6}{n+6}$

1203) $k^2 - 5k + 3 + \frac{7}{k+4}$ 1204) $10x^2 + 3x + 8 - \frac{2}{x-2}$ 1205) $x^2 - 8x - 7 - \frac{2}{x+9}$

1206) $10n^2 - 2n - 3 + \frac{2}{n-7}$ 1207) $m^2 - 8m - 5 + \frac{3}{m+3}$ 1208) $p^2 - 8p + 8 - \frac{5}{p-10}$

1209) $3x^2 - 3x - 2 - \frac{8}{x+10}$ 1210) $n^2 - 4n + 5 - \frac{7}{n-10}$ 1211) $n^2 + n - 5 - \frac{8}{n+6}$

1212) $6x^2 + 9x + 10 + \frac{8}{x-4}$ 1213) $r^2 + r + 6 - \frac{2}{r+3}$ 1214) $m^2 - 7m - 8 - \frac{3}{m+3}$

1215) $x^2 + 5x - 3 - \frac{5}{x-4}$ 1216) $3n^2 - 6n + 7 - \frac{9}{n-1}$ 1217) $b^2 - b + 4 + \frac{3}{b+2}$

1218) $6v^2 - 9v + 5 + \frac{5}{v+10}$ 1219) $5x^2 + x - 4 + \frac{2}{x-6}$ 1220) $n^2 - n - 6 - \frac{8}{n+7}$

1221) Domain: $x > -2$
Range: All reals

1222) Domain: $x > -\frac{2}{3}$
Range: All reals

1223) Domain: $x > \frac{9}{4}$
Range: All reals

1224) Domain: $x > -\frac{3}{2}$
Range: All reals

1225) Domain: $x > -\frac{16}{3}$
Range: All reals

1226) Domain: $x > -\frac{15}{4}$
Range: All reals

1227) Domain: $x > -1$
Range: All reals

1228) Domain: $x > -\frac{5}{2}$
Range: All reals

1229) Domain: $x > -2$
Range: All reals

1230) Domain: $x > -5$
Range: All reals

1231) Domain: $x \geq -4$
Range: $y \geq -5$

1232) Domain: $x \geq -4$
Range: $y \geq 0$

1233) Domain: $x \geq 0$
Range: $y \geq -3$

1234) Domain: $x \geq 0$
Range: $y \geq -5$

1235) Domain: $x \geq 0$
Range: $y \geq 0$

1236) Domain: $x \geq 0$
Range: $y \geq -3$

1237) Domain: $x \geq -5$
Range: $y \geq -5$

1238) Domain: $x \geq 0$
Range: $y \geq -2$

1239) Domain: $x \geq -6$
Range: $y \geq 0$

1240) Domain: $x \geq 0$
Range: $y \geq 3$

1241) Domain: $x > -6$
Range: All reals

1242) Domain: $x > 3$
Range: All reals

1243) Domain: $x > -6$
Range: All reals

1244) Domain: $x > \frac{5}{2}$
Range: All reals

1245) Domain: $x > \frac{1}{4}$
Range: All reals

1246) Domain: $x > -\frac{7}{4}$
Range: All reals

1247) Domain: $x > -\frac{1}{2}$
Range: All reals

1248) Domain: $x > \frac{5}{3}$
Range: All reals

1249) Domain: $x > \frac{7}{4}$
Range: All reals

1250) Domain: $x > -6$
Range: All reals

1251) Domain: $x \geq -5$
Range: $y \geq 0$

1252) Domain: $x \geq 3$
Range: $y \geq -2$

1253) Domain: $x \geq 0$
Range: $y \geq -1$

1254) Domain: $x \geq 1$
Range: $y \geq 0$

1255) Domain: $x \geq 0$
Range: $y \geq 0$

1256) Domain: $x \geq -4$
Range: $y \geq 1$

1257) Domain: $x \geq 0$
Range: $y \geq 1$

1258) Domain: $x \geq 0$
Range: $y \geq -4$

1259) Domain: $x \geq -4$
Range: $y \geq -1$

1260) Domain: $x \geq 1$
Range: $y \geq 0$

1261) −0.4379

1262) −0.1473

1263) 0.3633

1264) 9.9208
1265) 0.1944
1266) −9.7654
1267) 0.375
1268) 4.2958
1269) 9.5812
1270) 4.5026
1271) −5.3587
1272) −0.2023
1273) −0.5496
1274) −3.6755
1275) 8.3053
1276) 0.2293
1277) 0.2943
1278) 2.7813
1279) 7.3158
1280) −0.7254
1281) $\begin{bmatrix} 11 \\ -11 \\ 11 \end{bmatrix}$
1282) $\begin{bmatrix} 2 & -5 \\ 1 & -11 \end{bmatrix}$
1283) $\begin{bmatrix} 8 \\ -3 \end{bmatrix}$
1284) $\begin{bmatrix} 8 & 7 & 0 & -1 \end{bmatrix}$
1285) $\begin{bmatrix} -7 & -3 & -5 \end{bmatrix}$
1286) $\begin{bmatrix} 11 & -2 \\ -5 & 5 \end{bmatrix}$
1287) $\begin{bmatrix} 11 \\ -1 \\ -9 \\ -4 \end{bmatrix}$
1288) No unique solution
1289) $\begin{bmatrix} 11 & -5 \\ -5 & 0 \end{bmatrix}$
1290) $\begin{bmatrix} -4 & 5 \\ 2 & -2 \end{bmatrix}$
1291) $\begin{bmatrix} 5 & -4 \\ -4 & -3 \end{bmatrix}$
1292) $\begin{bmatrix} 0 & -10 \\ 4 & -9 \end{bmatrix}$
1293) $\begin{bmatrix} 11 & 7 \\ -1 & -11 \end{bmatrix}$
1294) $\begin{bmatrix} -3 & 5 \\ -2 & 4 \end{bmatrix}$
1295) $\begin{bmatrix} -3 & -8 \\ 11 & 8 \end{bmatrix}$
1296) $\begin{bmatrix} 2 \\ 5 \\ 4 \\ 0 \end{bmatrix}$
1297) No unique solution
1298) No unique solution
1299) $\begin{bmatrix} -5 \\ -6 \\ 0 \\ -2 \end{bmatrix}$
1300) $\begin{bmatrix} 3 & 1 & 8 \end{bmatrix}$
1301) $\{2, i, -i\}$
1302) $\{i\sqrt{2}$ mult. 2, $-i\sqrt{2}$ mult. 2, $\sqrt{2}, -\sqrt{2}\}$
1303) $\left\{5, \frac{-5+5i\sqrt{3}}{2}, \frac{-5-5i\sqrt{3}}{2}, -1, \frac{1+i\sqrt{3}}{2}, \frac{1-i\sqrt{3}}{2}\right\}$
1304) $\{i, -i, i\sqrt{2}, -i\sqrt{2}, \sqrt{2}, -\sqrt{2}\}$
1305) $\{i\sqrt{3}, -i\sqrt{3}, i\sqrt{7}, -i\sqrt{7}\}$
1306) $\{\sqrt{7}$ mult. 2, $-\sqrt{7}$ mult. 2$\}$
1307) $\{-3, 3, 3i, -3i\}$
1308) $\left\{3, \frac{-3+3i\sqrt{3}}{2}, \frac{-3-3i\sqrt{3}}{2}, 1, \frac{-1+i\sqrt{3}}{2}, \frac{-1-i\sqrt{3}}{2}\right\}$
1309) $\{2i$ mult. 2, $-2i$ mult. 2$\}$
1310) $\left\{5, \frac{-5+5i\sqrt{3}}{2}, \frac{-5-5i\sqrt{3}}{2}\right\}$
1311) $\left\{i\sqrt{5}, -i\sqrt{5}, \sqrt{5}, -\sqrt{5}, \frac{i\sqrt{6}}{2}, -\frac{i\sqrt{6}}{2}, \frac{\sqrt{6}}{2}, -\frac{\sqrt{6}}{2}\right\}$
1312) $\left\{-\frac{1}{2}, \frac{1+i\sqrt{3}}{4}, \frac{1-i\sqrt{3}}{4}, \frac{1}{2}, \frac{-1+i\sqrt{3}}{4}, \frac{-1-i\sqrt{3}}{4}\right\}$
1313) $\left\{\frac{i\sqrt{6}}{2}, -\frac{i\sqrt{6}}{2}, \frac{\sqrt{6}}{2}, -\frac{\sqrt{6}}{2}, i, -i, -1, 1\right\}$
1314) $\left\{\frac{i\sqrt{5}}{5}, -\frac{i\sqrt{5}}{5}, i, -i\right\}$
1315) $\left\{\sqrt{5}, -\sqrt{5}, \frac{2\sqrt{5}}{5}, -\frac{2\sqrt{5}}{5}\right\}$
1316) $\left\{\frac{i\sqrt{3}}{3}, -\frac{i\sqrt{3}}{3}, \frac{\sqrt{3}}{3}, -\frac{\sqrt{3}}{3}, i\sqrt{2}, -i\sqrt{2}, \sqrt{2}, -\sqrt{2}\right\}$
1317) $\left\{-\frac{1}{2}, \frac{2i\sqrt{6}}{3}, -\frac{2i\sqrt{6}}{3}, \sqrt{7}, -\sqrt{7}\right\}$
1318) $\left\{5, i\sqrt{2}, -i\sqrt{2}, \frac{2\sqrt{3}}{3}, -\frac{2\sqrt{3}}{3}\right\}$
1319) $\left\{-\frac{3}{2}, i\sqrt{2}, -i\sqrt{2}, \frac{\sqrt{35}}{5}, -\frac{\sqrt{35}}{5}\right\}$
1320) $\left\{i\sqrt{2}, -i\sqrt{2}, \frac{2i\sqrt{3}}{3}, -\frac{2i\sqrt{3}}{3}, \frac{2\sqrt{3}}{3}, -\frac{2\sqrt{3}}{3}\right\}$

1321) $\{i\sqrt{6}, -i\sqrt{6}, \sqrt{3}, -\sqrt{3}\}$ 1322) $\left\{-5, \frac{5+5i\sqrt{3}}{2}, \frac{5-5i\sqrt{3}}{2}\right\}$

1323) $\{4, -2+2i\sqrt{3}, -2-2i\sqrt{3}\}$ 1324) $\{-4, i\sqrt{5}, -i\sqrt{5}\}$

1325) $\{\sqrt{2}, -\sqrt{2}, i, -i, -1, 1\}$

1326) $\left\{-1, \frac{1+i\sqrt{3}}{2}, \frac{1-i\sqrt{3}}{2}, 1, \frac{-1+i\sqrt{3}}{2}, \frac{-1-i\sqrt{3}}{2}\right\}$

1327) $\{i\sqrt{5}, -i\sqrt{5}, i\sqrt{3}, -i\sqrt{3}, \sqrt{3}, -\sqrt{3}\}$ 1328) $\{3i, -3i, -1, 1\}$ 1329) $\{-1, 1, -2, 2\}$

1330) $\{-2, 2, i, -i\}$ 1331) $\left\{3, 2i, -2i, \frac{i\sqrt{3}}{3}, -\frac{i\sqrt{3}}{3}\right\}$ 1332) $\left\{i, -i, \frac{i}{2}, -\frac{i}{2}, -\frac{1}{2}, \frac{1}{2}\right\}$

1333) $\left\{i\sqrt{2}, -i\sqrt{2}, \sqrt{2}, -\sqrt{2}, \frac{i\sqrt{6}}{3}, -\frac{i\sqrt{6}}{3}, \frac{\sqrt{6}}{3}, -\frac{\sqrt{6}}{3}\right\}$

1334) $\left\{1, \frac{-1+i\sqrt{3}}{2}, \frac{-1-i\sqrt{3}}{2}, \frac{2}{3}, \frac{-1+i\sqrt{3}}{3}, \frac{-1-i\sqrt{3}}{3}\right\}$

1335) $\left\{i\sqrt{2}, -i\sqrt{2}, \sqrt{2}, -\sqrt{2}, \frac{2i\sqrt{3}}{3}, -\frac{2i\sqrt{3}}{3}, \frac{2\sqrt{3}}{3}, -\frac{2\sqrt{3}}{3}\right\}$

1336) $\left\{\frac{2i\sqrt{3}}{3}, -\frac{2i\sqrt{3}}{3}, \frac{2\sqrt{3}}{3}, -\frac{2\sqrt{3}}{3}, i, -i, -1, 1\right\}$ 1337) $\left\{-2, 2, \frac{\sqrt{2}}{2}, -\frac{\sqrt{2}}{2}\right\}$

1338) $\left\{\sqrt{3}, -\sqrt{3}, \frac{\sqrt{15}}{3}, -\frac{\sqrt{15}}{3}\right\}$ 1339) $\left\{-\frac{3}{5}, \frac{3\sqrt{5}}{5}, -\frac{3\sqrt{5}}{5}, i, -i\right\}$

1340) $\left\{\frac{2}{3}, 2i, -2i, \frac{\sqrt{10}}{2}, -\frac{\sqrt{10}}{2}\right\}$ 1341) $\{2, -2\}$ 1342) $\{-4, 1\}$

1343) $\{-4, -6\}$ 1344) $\{-8, -6\}$ 1345) $\{-4, -5\}$ 1346) $\{-8, 4\}$

1347) $\{4, 0\}$ 1348) $\{-8, 0\}$ 1349) $\{5, 6\}$ 1350) $\{-7, -8\}$

1351) $\{8, -2\}$ 1352) $\{4, -2\}$ 1353) $\{-1\}$ 1354) $\{4, 0\}$

1355) $\{5, 1\}$ 1356) $\{-5, -8\}$ 1357) $\{2, -7\}$ 1358) $\{-5, 2\}$

1359) $\{8, 2\}$ 1360) $\{-4, 3\}$ 1361) $\{\sqrt{3}, -\sqrt{3}\}$ 1362) $\{\sqrt{69}, -\sqrt{69}\}$

1363) $\{4, -4\}$ 1364) $\{2, -2\}$ 1365) $\{7, -7\}$ 1366) $\{4, -4\}$

1367) $\left\{\frac{i\sqrt{6}}{3}, -\frac{i\sqrt{6}}{3}\right\}$ 1368) $\left\{\frac{i\sqrt{33}}{2}, -\frac{i\sqrt{33}}{2}\right\}$ 1369) $\{3\sqrt{10}, -3\sqrt{10}\}$

1370) $\left\{\frac{3i\sqrt{30}}{5}, -\frac{3i\sqrt{30}}{5}\right\}$ 1371) $\{\sqrt{41}, -\sqrt{41}\}$ 1372) $\left\{\frac{i\sqrt{129}}{3}, -\frac{i\sqrt{129}}{3}\right\}$

1373) $\{\sqrt{74}, -\sqrt{74}\}$ 1374) $\{i, -i\}$ 1375) $\{\sqrt{7}, -\sqrt{7}\}$ 1376) $\{6, -6\}$

1377) $\{1, -1\}$ 1378) $\left\{\frac{9}{2}, -\frac{9}{2}\right\}$ 1379) $\{3, -3\}$ 1380) $\{5, -5\}$

1381) $\left\{\frac{7+\sqrt{105}}{4}, \frac{7-\sqrt{105}}{4}\right\}$ 1382) $\left\{\frac{\sqrt{15}}{2}, -\frac{\sqrt{15}}{2}\right\}$ 1383) $\left\{\frac{\sqrt{11}}{2}, -\frac{\sqrt{11}}{2}\right\}$

1384) $\left\{\frac{7}{2}, -\frac{14}{3}\right\}$ 1385) $\{9, -5\}$ 1386) $\left\{\frac{5+i\sqrt{103}}{8}, \frac{5-i\sqrt{103}}{8}\right\}$

1387) $\left\{\frac{26}{5}, -3\right\}$ 1388) $\left\{\frac{3+i\sqrt{111}}{20}, \frac{3-i\sqrt{111}}{20}\right\}$ 1389) $\left\{\frac{1+i\sqrt{59}}{5}, \frac{1-i\sqrt{59}}{5}\right\}$

1390) $\left\{\frac{6+3i\sqrt{6}}{10}, \frac{6-3i\sqrt{6}}{10}\right\}$ 1391) $\left\{\frac{1+3i\sqrt{3}}{14}, \frac{1-3i\sqrt{3}}{14}\right\}$ 1392) $\left\{\frac{i\sqrt{15}}{5}, -\frac{i\sqrt{15}}{5}\right\}$

1393) $\left\{\frac{i\sqrt{42}}{7}, -\frac{i\sqrt{42}}{7}\right\}$ 1394) $\left\{\frac{3\sqrt{5}}{5}, -\frac{3\sqrt{5}}{5}\right\}$

1395) $\left\{\frac{11+\sqrt{185}}{2}, \frac{11-\sqrt{185}}{2}\right\}$ 1396) $\left\{\frac{-1+i\sqrt{139}}{10}, \frac{-1-i\sqrt{139}}{10}\right\}$

1397) $\left\{\frac{13}{6}, -2\right\}$

1398) $\{3, -6\}$

1399) $\left\{\frac{-1+\sqrt{137}}{8}, \frac{-1-\sqrt{137}}{8}\right\}$

1400) $\left\{\frac{9}{2}, -5\right\}$

1401) $\{-4\}$

1402) $\{9\}$

1403) $\{6\}$

1404) $\{1\}$

1405) $\{-8\}$

1406) $\{0\}$

1407) $\{5\}$

1408) $\{3\}$

1409) $\{4\}$

1410) $\{16\}$

1411) $\left\{\frac{6}{5}\right\}$

1412) $\{-1\}$

1413) $\{-1\}$

1414) $\{-1\}$

1415) $\left\{-\frac{21}{5}\right\}$

1416) $\{-1\}$

1417) $\left\{\frac{9}{2}\right\}$

1418) $\{1\}$

1419) $\left\{\frac{4}{3}\right\}$

1420) $\{2\}$

1421) $\{5\}$

1422) $\{-4\}$

1423) $\{7\}$

1424) $\{4\}$

1425) $\{-3\}$

1426) $\{45\}$

1427) $\{8\}$

1428) $\{16\}$

1429) $\{10\}$

1430) $\{32\}$

1431) $\{-4\}$

1432) $\{12\}$

1433) $\{1\}$

1434) $\{-2\}$

1435) $\{-1\}$

1436) $\{1\}$

1437) $\left\{\frac{19}{2}\right\}$

1438) $\{1\}$

1439) $\left\{\frac{4}{3}\right\}$

1440) $\left\{-\frac{35}{4}\right\}$

1441) $\{45, 315\}$

1442) $\{240, 300\}$

1443) $\{135, 315\}$

1444) $\{45, 315\}$

1445) $\{270\}$

1446) $\{45, 315\}$

1447) $\{30, 150\}$

1448) $\{150, 330\}$

1449) $\{30, 150\}$

1450) $\{135, 315\}$

1451) $\{45, 225\}$

1452) $\{270\}$

1453) $\{150, 210\}$

1454) $\{60, 120\}$

1455) $\{30, 150\}$

1456) $\{30, 150\}$

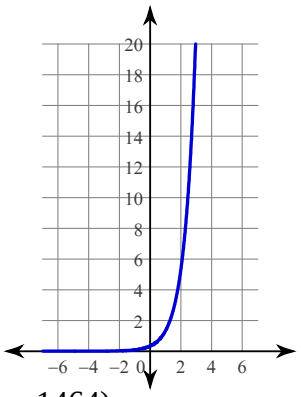
1457) $\{60, 300\}$

1458) No solution.

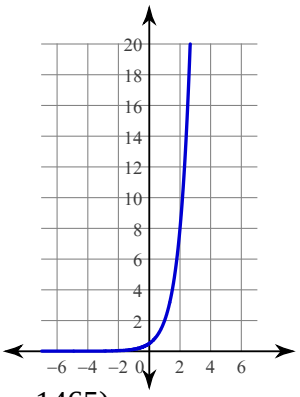
1459) $\{45, 225\}$

1460) $\{45, 315\}$

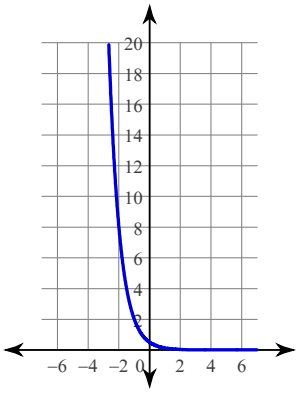
1461)



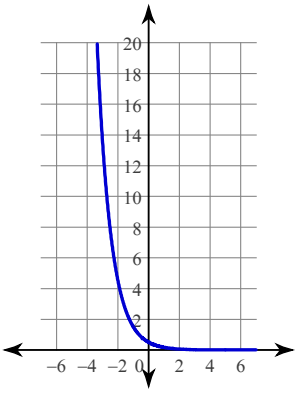
1462)



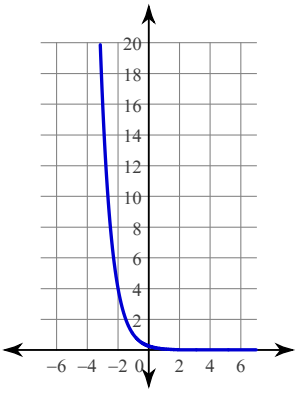
1463)



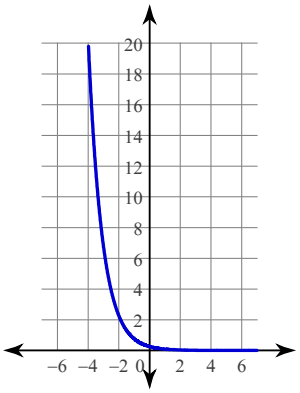
1464)



1465)



1466)



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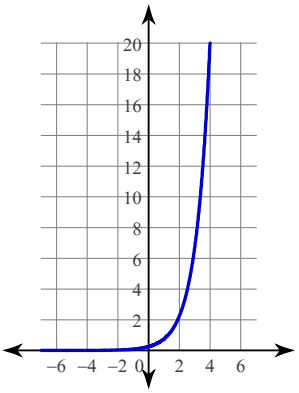

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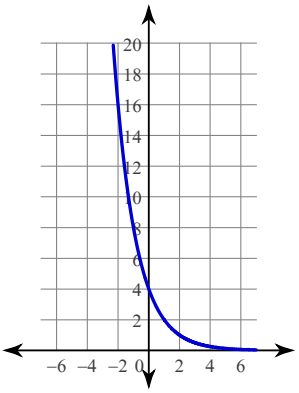

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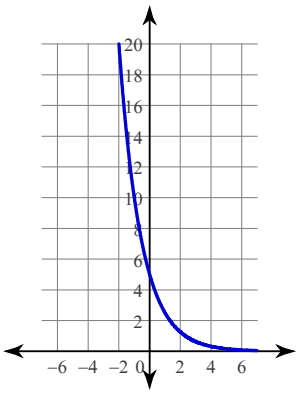

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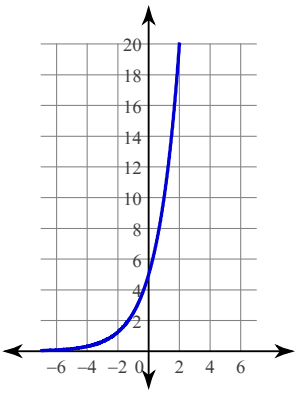

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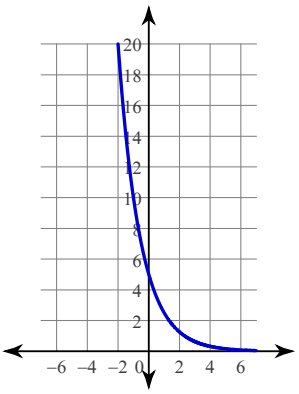

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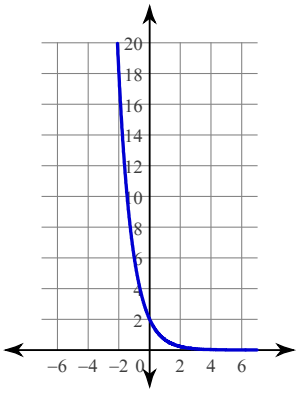

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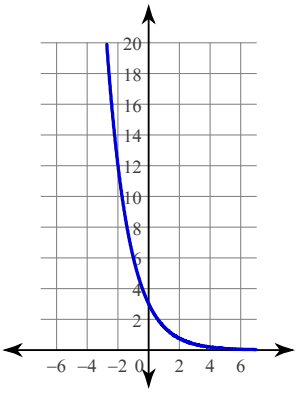

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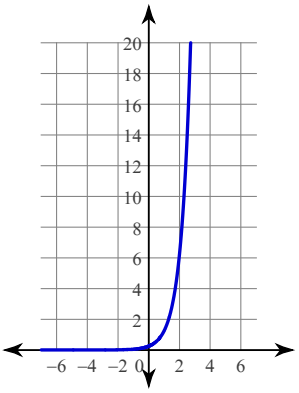

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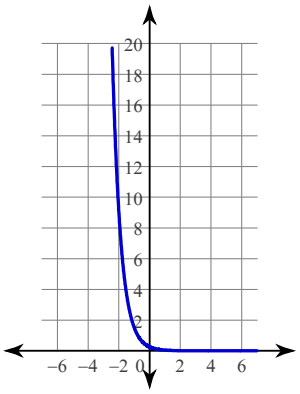

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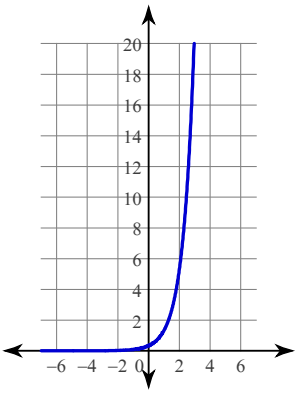

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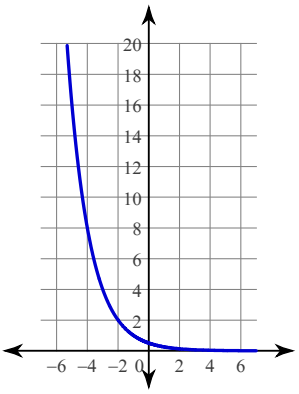

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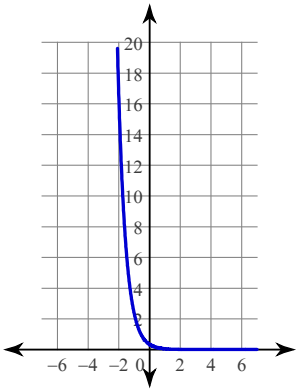

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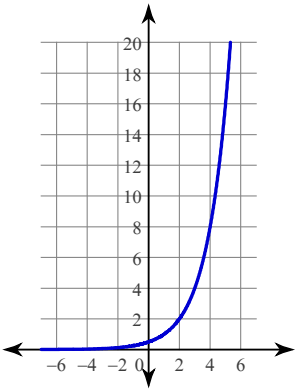

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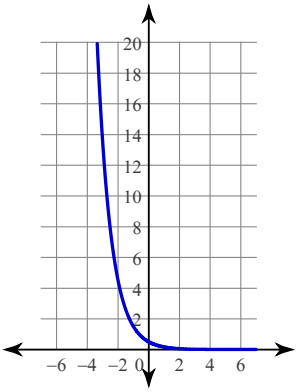

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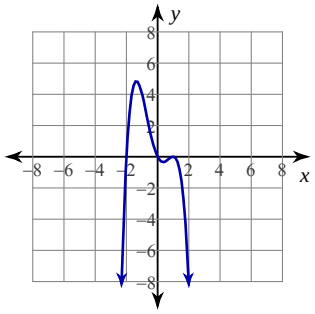

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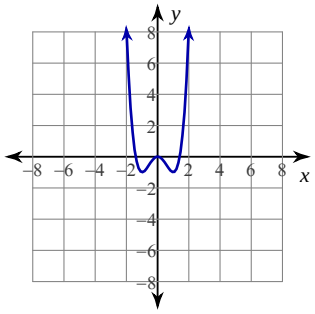

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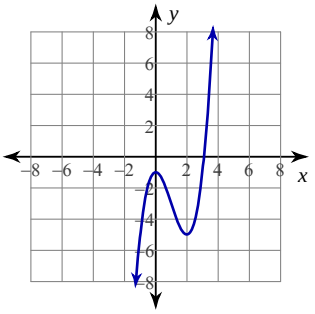

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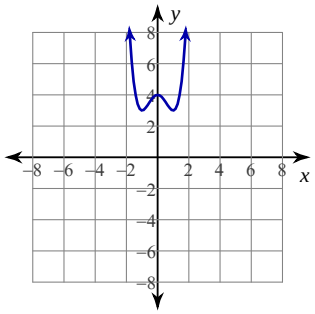

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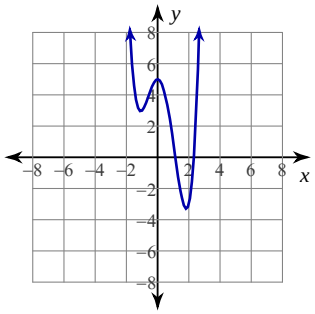

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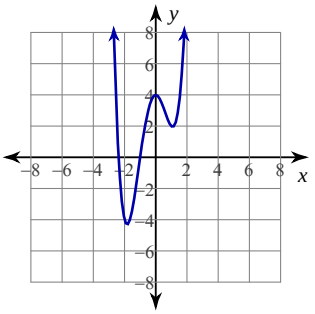

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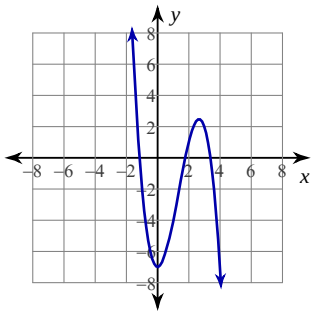

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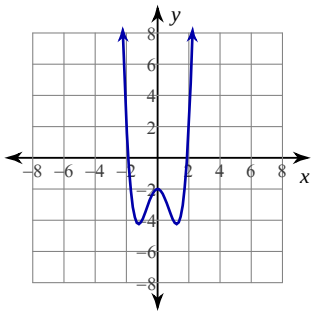

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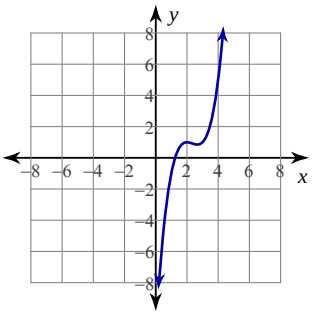

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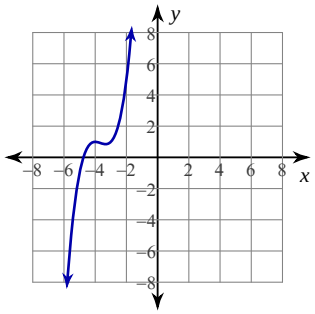

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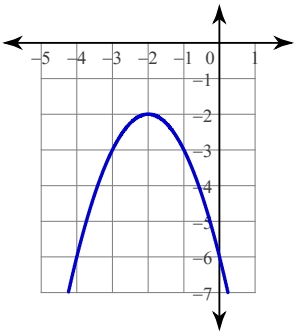

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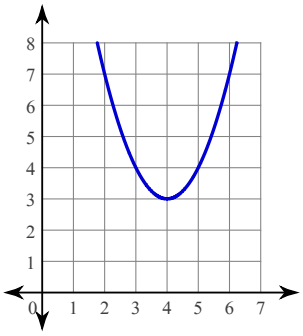

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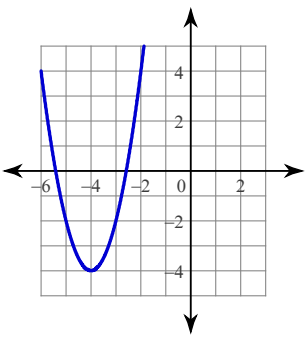

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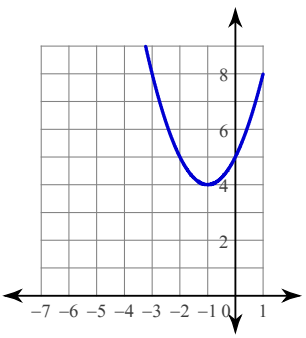

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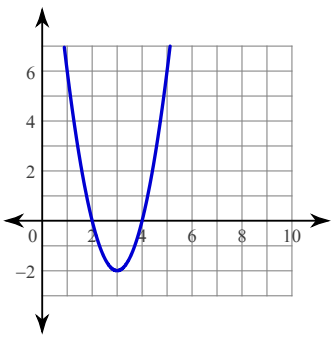

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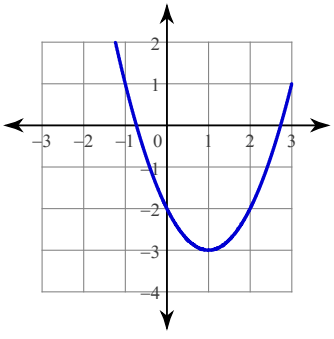

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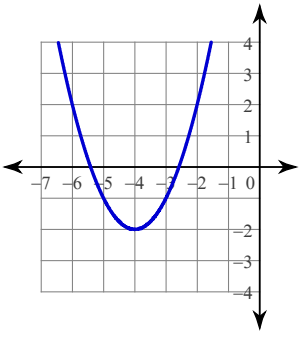

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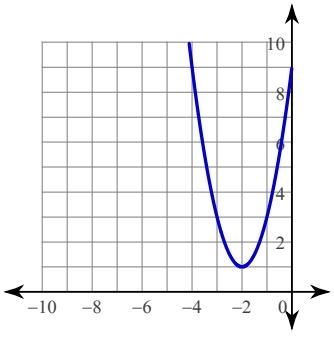

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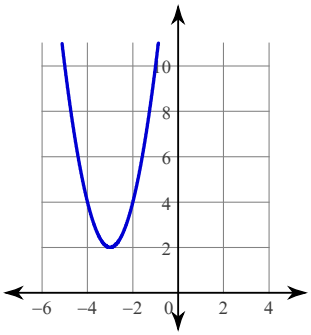

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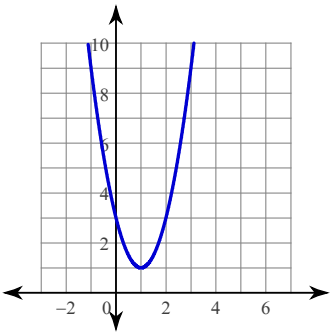

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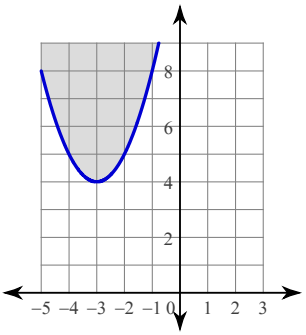

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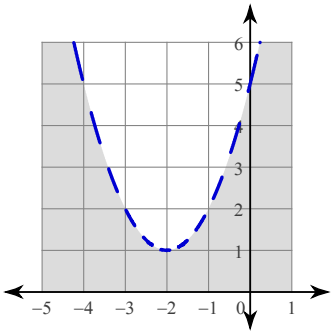

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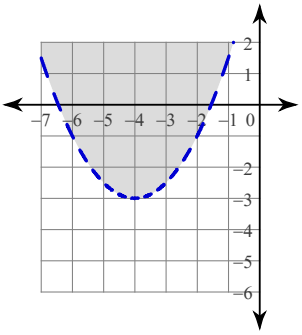

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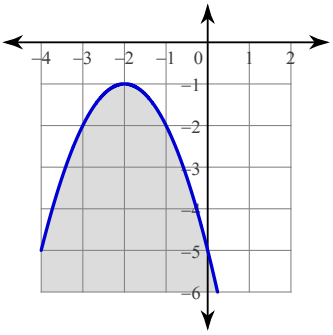

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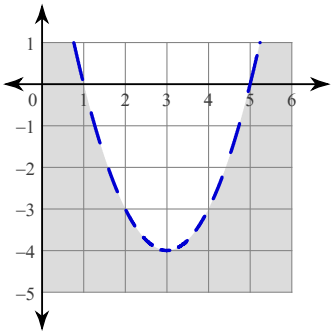

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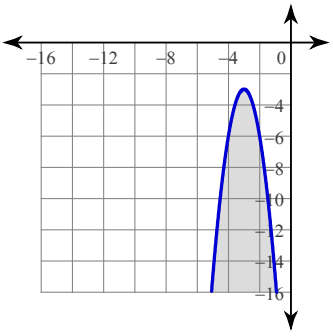

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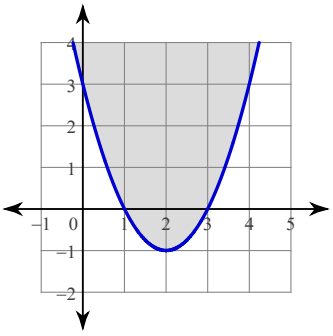

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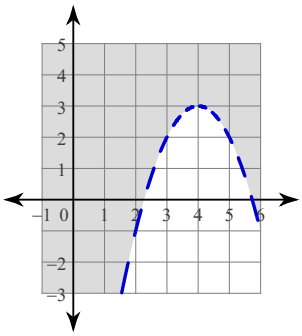

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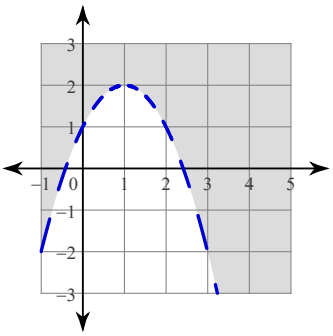

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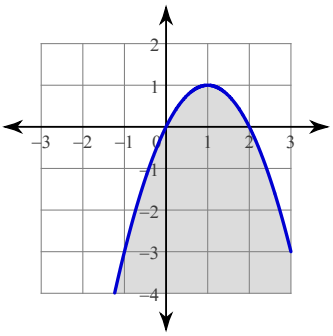

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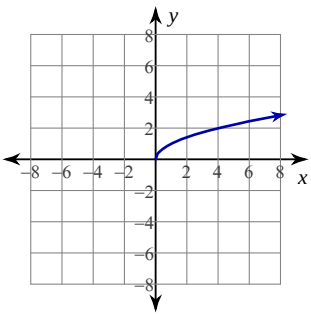

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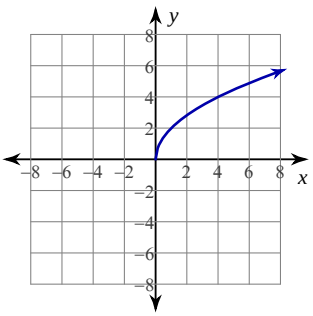

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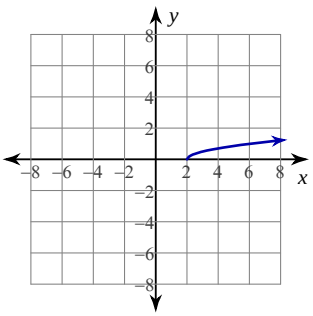

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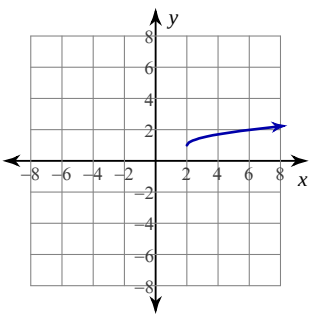

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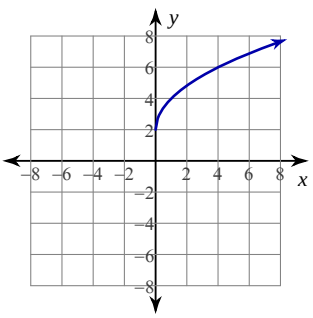

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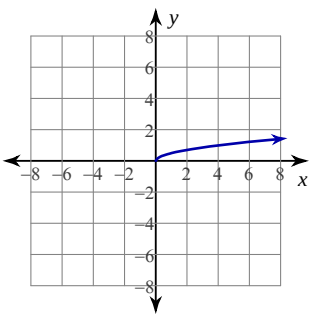

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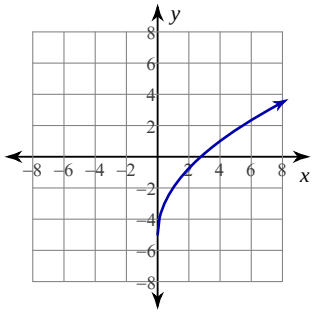

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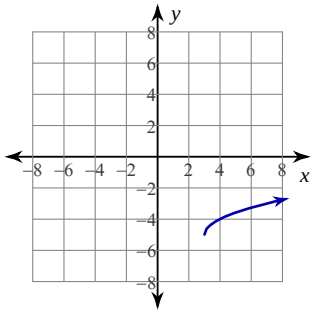

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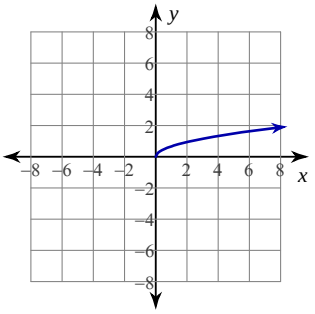

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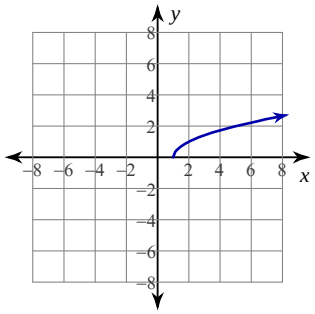

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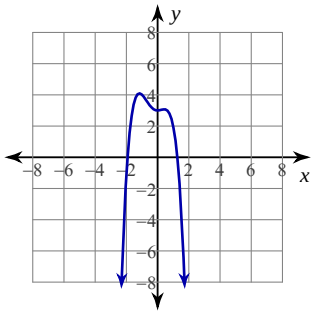

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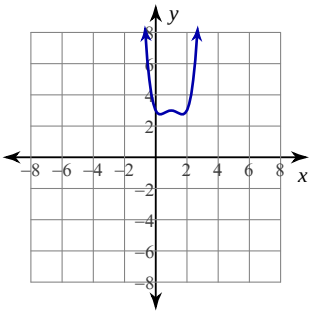

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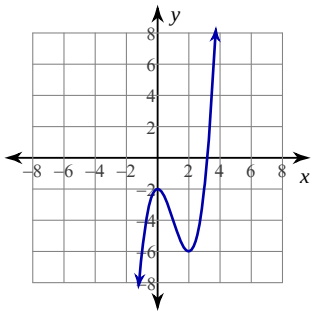

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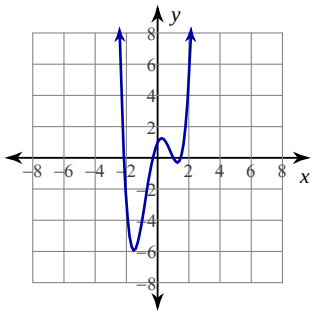

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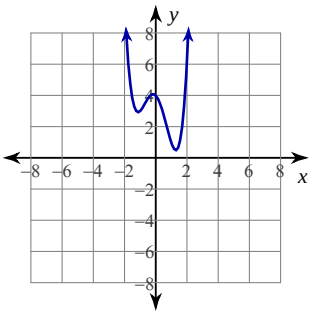

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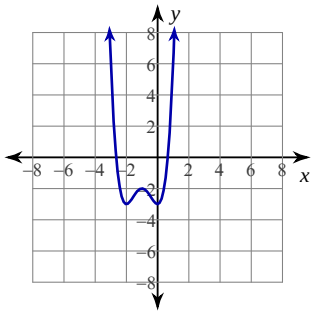

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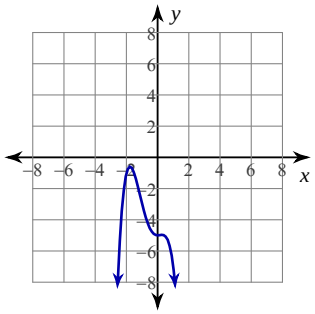

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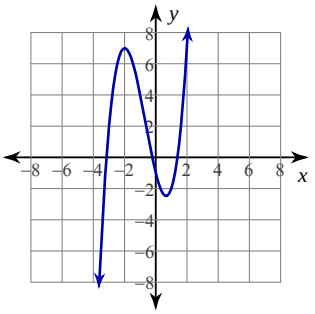

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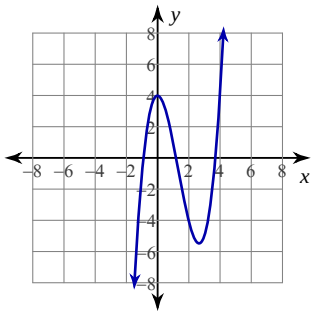

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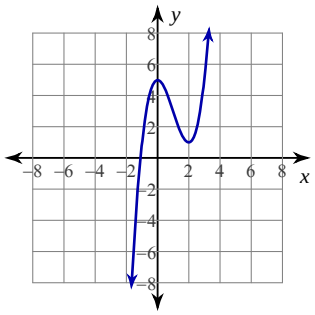

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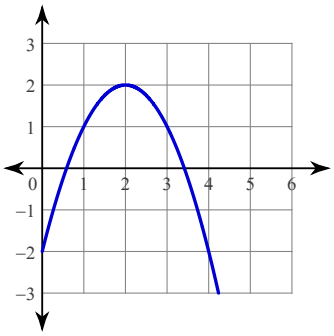

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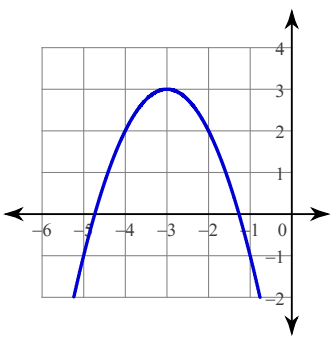

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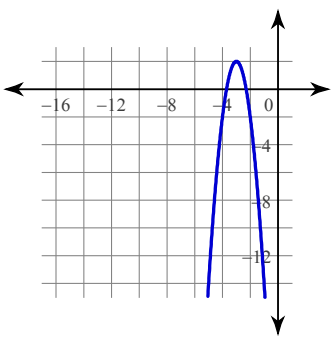

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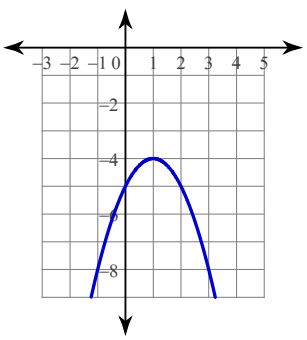

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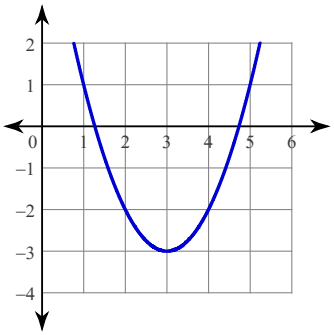

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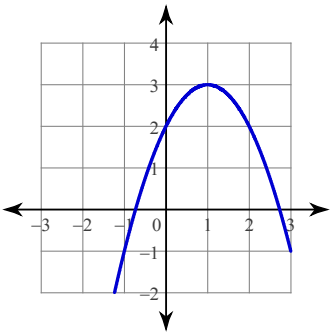
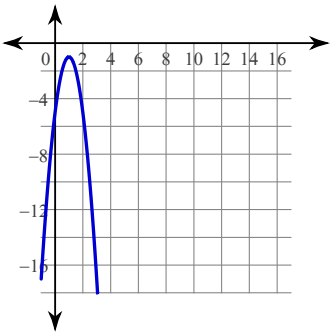
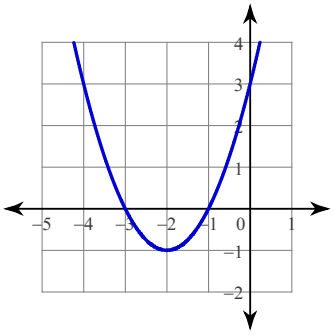


1537)



1538)



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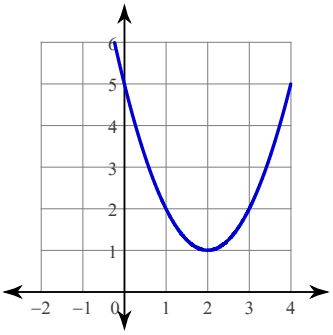

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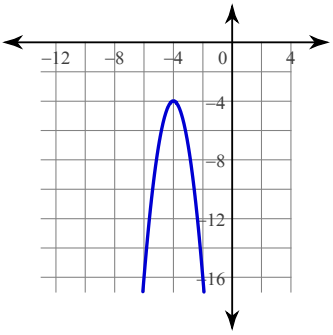

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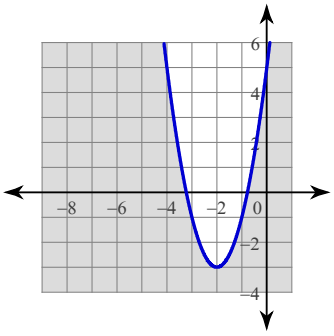

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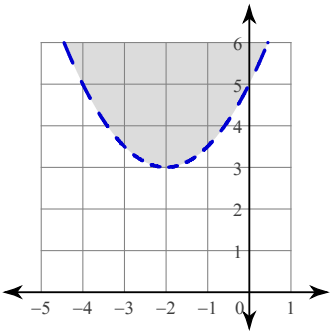

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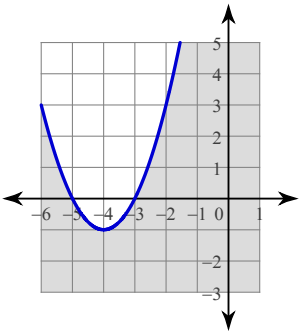

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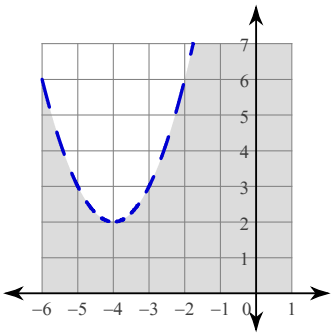
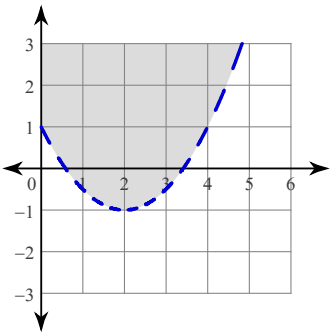
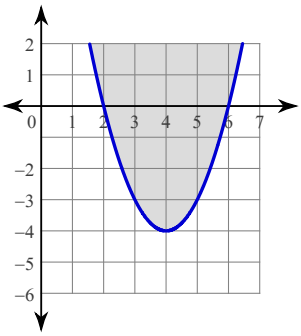


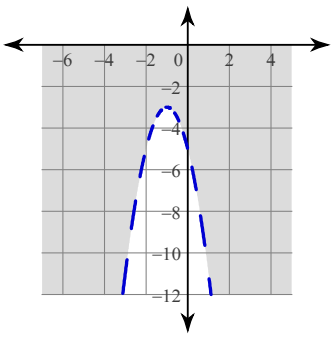
1545)



1546)



1547)



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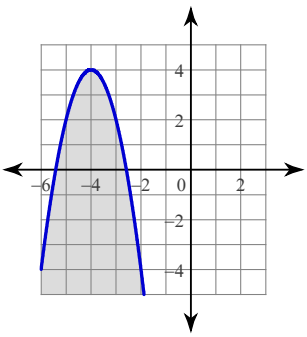

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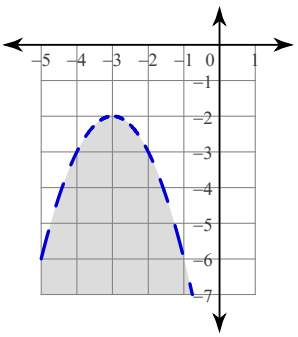

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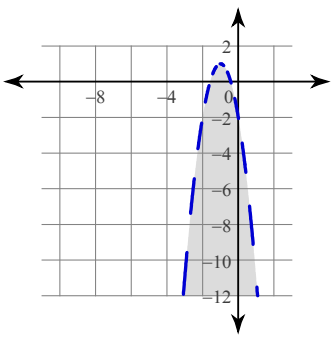

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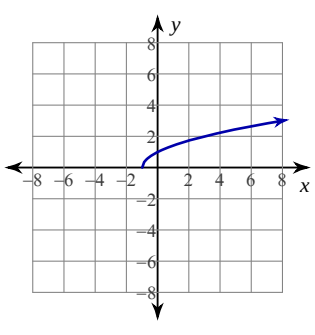

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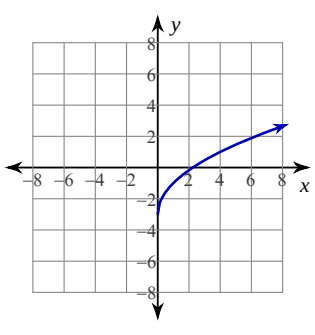
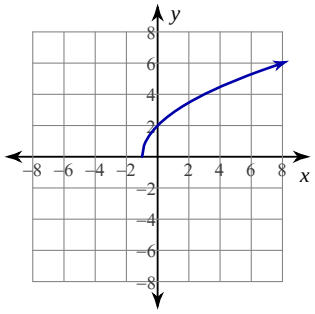
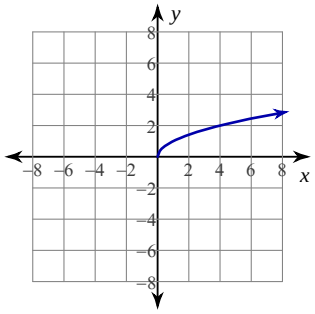
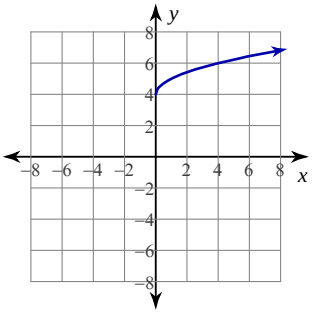
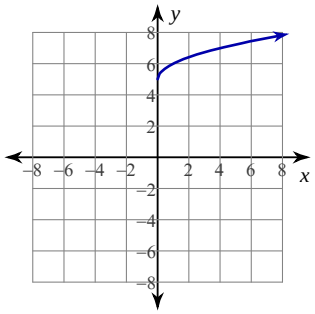
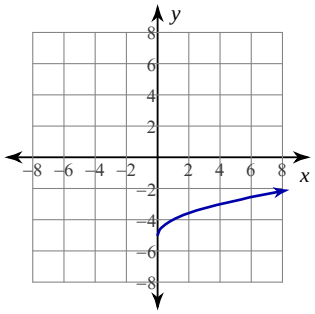


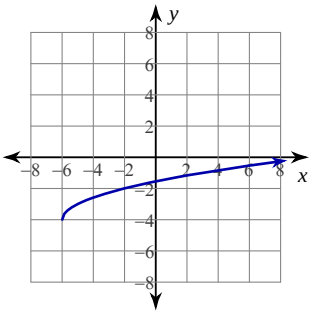
1553) 

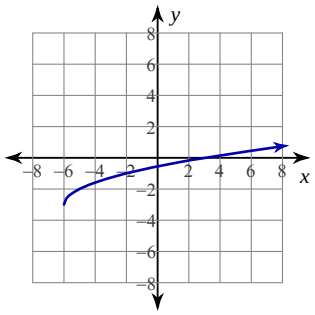
1554) 

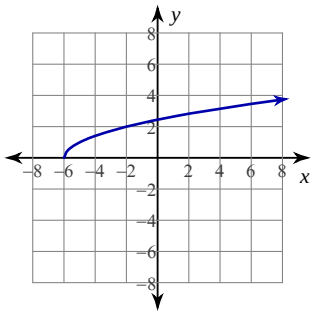
1555) 

1556) 

1557) 

1558) 

1559) 

1560) 

1561) $y = \log_4 -2x$

1562) $y = \log_2 4^x$

1563) $y = \log_2 4x$

1564) $y = \log_3 (x-4)$

1565) $y = \log_3 (x+10)$

1566) $y = \log_6 -2x$

1567) $y = \log_2 (x+9)$

1568) $y = \log_{\frac{1}{2}} (x+6)$

1569) $y = \log_{\frac{1}{5}} 4x$

1570) $y = \log_{\frac{1}{5}} (x-6)$

1571) $f^{-1}(x) = -2x - 6$

1572) $f^{-1}(x) = \sqrt[3]{-x+3}$

1573) $f^{-1}(n) = \dfrac{7n-12}{8}$

1574) $f^{-1}(x) = (x+2)^3$

1575) $h^{-1}(x) = \dfrac{\sqrt[3]{4x}}{2}$

1576) $h^{-1}(x) = 2x^3 + 3$

1577) $h^{-1}(x) = \dfrac{1}{-x+1} + 2$

1578) $f^{-1}(x) = -\dfrac{3}{x-1} + 1$

1579) $g^{-1}(n) = -\dfrac{3}{n} + 2$

1580) $g^{-1}(x) = 4 - \dfrac{9}{2}x$

1581) $y = 6^x - 8$

1582) $y = 3^{\frac{x}{5}}$

1583) $y = 6^{x+9}$

1584) $y = \log_5 10^x$

1585) $y = -\dfrac{1}{4 \cdot 3^x}$

1586) $y = 5^{\frac{x}{4}}$

1587) $y = 6^{-\frac{x}{6}}$

1588) $y = -\dfrac{6^x}{3}$

1589) $y = 6^x - 10$

1590) $y = 5^{-\frac{x}{6}}$

1591) $3xy^2$

1592) $6ab^8$

1593) $\dfrac{9}{xy^2}$

1594) $24a^3b^2$

1595) $12y^5$

1596) $4m^3$

1597) $8x^7y^8$

1598) $8n^5m^4$

1599) $24x^{12}y^4$

1600) $\dfrac{4x^4}{y^5}$

1601) $(5a^2 - 3)(2a - 1)$

1602) $(k^2 - 6)(7k - 5)$

1603) $(3x^2 - 8)(x + 4)$

1604) $(6p^2 - 1)(7p + 8)$

1605) $(3m^2 - 1)(5m + 3)$

1606) $(5n^2 + 7)(3n + 7)$

1607) $(7r^2 + 4)(8r - 7)$

1608) $(4x^2 + 1)(3x + 2)$

1609) $(4b^2 + 3)(2b - 7)$

1610) $(2n^2 - 3)(6n + 7)$

1611) $(a - 2)(a - 7)$

1612) $(x-5)(x-3)$ 1613) $4n(n+4)$ 1614) $(p+1)(p+3)$ 1615) $3(m+8)(m-4)$

1616) $(n-10)(n-8)$ 1617) $(r-7)(r+1)$ 1618) $n(n-3)(n-2)$ 1619) $(n-6)(n-2)$

1620) $(k+3)(k+4)$ 1621) $5(x^2-10)(x^2-7)$ 1622) $(x^2+6)(x^2-2)$

1623) $(u^2+4)(u^2+2)$ 1624) $2(x^2+5)(x+1)(x-1)$ 1625) $6(a^2+2)(a+1)(a-1)$

1626) $(a^2-10)(a^2+9)$ 1627) $6(m^2+8)(m^2-10)$ 1628) $4(x^2-10)^2$

1629) $(x^2+4)(x+1)(x-1)$ 1630) $(m^2-3)(m^2+7)$ 1631) $(3a+1)(3a-1)$

1632) $(4k-5)^2$ 1633) $(2x+3)(2x-3)$ 1634) $(x+2)(x-2)$ 1635) $(3n+1)^2$

1636) $(p+2)^2$ 1637) $(2x+3)^2$ 1638) $(2b+5)^2$ 1639) $(r+3)(r-3)$

1640) $(x-5)^2$ 1641) $4(3+x)(9-3x+x^2)$ 1642) $3(m+1)(m^2-m+1)$

1643) $(1+6x)(1-6x+36x^2)$ 1644) $2(m+2)(m^2-2m+4)$ 1645) $(1+4x)(1-4x+16x^2)$

1646) $(4x+3)(16x^2-12x+9)$ 1647) $(x+5)(x^2-5x+25)$ 1648) $3(4u+1)(16u^2-4u+1)$

1649) $4(5+6x)(25-30x+36x^2)$ 1650) $2(u+3)(u^2-3u+9)$

1651) $(x^2-3)(x^2+4)(x+2)(x-2)=0$ 1652) $(x^2+2)(x^2+3)(x^2-3)=0$

1653) $(x^2+3)^2(x^2-3)^2=0$ 1654) $(x^2+3)(x^2-3)(x^2+5)(x^2-5)=0$

1655) $(x+2)(x^2-2x+4)(x-2)(x^2+2x+4)=0$

1656) $(x+1)(x^2-x+1)(x-1)(x^2+x+1)=0$ 1657) $(x^2+1)(x+1)(x-1)(x^2+2)(x^2-2)=0$

1658) $(x-5)(x^2+5x+25)(x-1)(x^2+x+1)=0$

1659) $(x-4)(x^2+4x+16)(x-1)(x^2+x+1)=0$

1660) $(x^2+2)(x^2-2)(x^2+4)(x+2)(x-2)=0$ 1661) $(x^2+5)^2(x^2-5)=0$

1662) $(x^2+1)^2(x+1)(x-1)=0$

1663) $(x^2+4)(x+2)(x-2)(x^2+1)(x+1)(x-1)=0$

1664) $(x^2+1)(x+1)(x-1)(x^2+3)(x^2-3)=0$ 1665) $(x^2+4)(x+2)(x-2)(x^2+3)(x^2-3)=0$

1666) $(x^2+2)(x^2-2)(x^2+1)(x+1)(x-1)=0$ 1667) $(x+1)(x^2-x+1)(x-3)(x^2+3x+9)=0$

1668) $(x+1)(x^2-x+1)(x-2)(x^2+2x+4)=0$ 1669) $(x^2+3)(x^2-3)(x^2+2)(x^2-2)=0$

1670) $(x^2+1)(x+1)(x-1)(x^2+5)(x^2-5)=0$ 1671) 18 1672) 99

1673) 13 1674) 20 1675) 3 1676) -29

1677) 6 1678) 1 1679) 9 1680) 62

1681) $2x$ 1682) $\dfrac{2n+3}{4n-1}$ 1683) $-x^3-x^2+4x+2$

1684) $-4a^2-8a+1$ 1685) $-t^2+5t-1$ 1686) $2a^2-3$ 1687) $9n^2+9n$

1688) $-6t^2-3t+3$ 1689) $12n^2+31n+20$ 1690) $\dfrac{n^3+1}{n-1}$

1691) # of complex zeros: 3
Possible # of real zeros: 3 or 1
Possible # of imaginary zeros: 2 or 0
Possible rational zeros: $\pm 1, \pm 5$
Zeros: $\{-5, -1, 1\}$

1692) # of complex zeros: 5
Possible # of real zeros: 5, 3, or 1
Possible # of imaginary zeros: 4, 2, or 0
Possible rational zeros:
$\pm 1, \pm 3, \pm 5, \pm 9, \pm 15, \pm 27, \pm 45, \pm 135$
Zeros: $\{-5, i\sqrt{3}, -i\sqrt{3}, 3i, -3i\}$

1693) # of complex zeros: 3
Possible # of real zeros: 3 or 1
Possible # of imaginary zeros: 2 or 0
Possible rational zeros: $\pm 1, \pm 13$
Zeros: $\{-13, 1 \text{ mult. } 2\}$

1694) # of complex zeros: 4
Possible # of real zeros: 4, 2, or 0
Possible # of imaginary zeros: 4, 2, or 0
Possible rational zeros: $\pm 1, \pm 2, \pm 4$
Zeros: $\{-2, 2, i, -i\}$

1695) # of complex zeros: 4
Possible # of real zeros: 4, 2, or 0
Possible # of imaginary zeros: 4, 2, or 0
Possible rational zeros: $\pm 1, \pm 2, \pm 4, \pm 8, \pm 16$
Zeros: $\{\sqrt{2}, -\sqrt{2}, 2\sqrt{2}, -2\sqrt{2}\}$

1696) # of complex zeros: 4
Possible # of real zeros: 4, 2, or 0
Possible # of imaginary zeros: 4, 2, or 0
Possible rational zeros:
$\pm 1, \pm 2, \pm 4, \pm 8, \pm 16, \pm 32$
Zeros: $\{2\sqrt{2}, -2\sqrt{2}, -2, 2\}$

1697) # of complex zeros: 4
Possible # of real zeros: 4, 2, or 0
Possible # of imaginary zeros: 4, 2, or 0
Possible rational zeros: $\pm 1, \pm 3, \pm 7, \pm 21$
Zeros: $\{i\sqrt{3}, -i\sqrt{3}, \sqrt{7}, -\sqrt{7}\}$

1698) # of complex zeros: 5
Possible # of real zeros: 5, 3, or 1
Possible # of imaginary zeros: 4, 2, or 0
Possible rational zeros:
$\pm 1, \pm 2, \pm 5, \pm 7, \pm 10, \pm 14, \pm 35, \pm 70$
Zeros: $\{-5, i\sqrt{7}, -i\sqrt{7}, i\sqrt{2}, -i\sqrt{2}\}$

1699) # of complex zeros: 5
Possible # of real zeros: 5, 3, or 1
Possible # of imaginary zeros: 4, 2, or 0
Possible rational zeros: $\pm 1, \pm 2, \pm 4, \pm 8, \pm 16$
Zeros: $\{2, i, -i, 2i\sqrt{2}, -2i\sqrt{2}\}$

1700) # of complex zeros: 5
Possible # of real zeros: 5, 3, or 1
Possible # of imaginary zeros: 4, 2, or 0
Possible rational zeros:
$\pm 1, \pm 2, \pm 3, \pm 4, \pm 6, \pm 9, \pm 12, \pm 18, \pm 36$
Zeros: $\{3, 2i, -2i, \sqrt{3}, -\sqrt{3}\}$

1701) # of complex zeros: 4
Possible # of real zeros: 4, 2, or 0
Possible # of imaginary zeros: 4, 2, or 0
Possible rational zeros: $\pm 1, \pm 2, \pm 4, \pm 8$
Zeros: $\{2i\sqrt{2}, -2i\sqrt{2}, -1, 1\}$

1702) # of complex zeros: 4
Possible # of real zeros: 4, 2, or 0
Possible # of imaginary zeros: 4, 2, or 0
Possible rational zeros:
$\pm 1, \pm 2, \pm 3, \pm 4, \pm 6, \pm 9, \pm 12, \pm 18, \pm 36$
Zeros: $\{-2, 2, 3i, -3i\}$

1703) # of complex zeros: 4
Possible # of real zeros: 4, 2, or 0
Possible # of imaginary zeros: 4, 2, or 0
Possible rational zeros:
$\pm 1, \pm 2, \pm 3, \pm 4, \pm 6, \pm 8, \pm 12, \pm 24$
Zeros: $\{2i, -2i, \sqrt{6}, -\sqrt{6}\}$

1704) # of complex zeros: 4
Possible # of real zeros: 4, 2, or 0
Possible # of imaginary zeros: 4, 2, or 0
Possible rational zeros:
$\pm 1, \pm 2, \pm 3, \pm 4, \pm 6, \pm 12$
Zeros: $\{-2, 2, i\sqrt{3}, -i\sqrt{3}\}$

1705) # of complex zeros: 5
Possible # of real zeros: 5, 3, or 1
Possible # of imaginary zeros: 4, 2, or 0
Possible rational zeros:
$\pm 1, \pm 2, \pm 3, \pm 6, \pm 9, \pm 18, \pm 27, \pm 54, \pm 81, \pm 162$
Zeros: $\{-3, 3i, -3i, i\sqrt{6}, -i\sqrt{6}\}$

1706) # of complex zeros: 5
Possible # of real zeros: 5, 3, or 1
Possible # of imaginary zeros: 4, 2, or 0
Possible rational zeros:
$\pm 1, \pm 2, \pm 5, \pm 7, \pm 10, \pm 14, \pm 35, \pm 70$
Zeros: $\{-5, \sqrt{7}, -\sqrt{7}, \sqrt{2}, -\sqrt{2}\}$

1707) # of complex zeros: 5
Possible # of real zeros: 5, 3, or 1
Possible # of imaginary zeros: 4, 2, or 0
Possible rational zeros:
$\pm 1, \pm 2, \pm 4, \pm 5, \pm 8, \pm 10, \pm 20, \pm 40$
Zeros: $\{2, 2i, -2i, \sqrt{5}, -\sqrt{5}\}$

1708) # of complex zeros: 5
Possible # of real zeros: 5, 3, or 1
Possible # of imaginary zeros: 4, 2, or 0
Possible rational zeros: $\pm 1, \pm 2, \pm 5, \pm 10$
Zeros: $\{-5, i, -i, \sqrt{2}, -\sqrt{2}\}$

1709) # of complex zeros: 3
Possible # of real zeros: 3 or 1
Possible # of imaginary zeros: 2 or 0
Possible rational zeros: $\pm 1, \pm 2, \pm 4, \pm 8$
Zeros: $\{-2, 1 + i\sqrt{3}, 1 - i\sqrt{3}\}$

1710) # of complex zeros: 3
Possible # of real zeros: 3 or 1
Possible # of imaginary zeros: 2 or 0
Possible rational zeros: $\pm 1, \pm 2, \pm 4, \pm 8$
Zeros: $\{2, -1 + i\sqrt{3}, -1 - i\sqrt{3}\}$

1711) 5
1712) -24
1713) -6
1714) -8
1715) 12
1716) 18
1717) -10
1718) 6
1719) 2
1720) 12

1721) Common Ratio: $r = 5$
$a_8 = 78125$
Explicit: $a_n = 5^{n-1}$

1722) Common Ratio: $r = -2$
$a_8 = -256$
Explicit: $a_n = 2 \cdot (-2)^{n-1}$

1723) Common Ratio: $r = -4$
$a_8 = -49152$
Explicit: $a_n = 3 \cdot (-4)^{n-1}$

1724) Common Ratio: $r = 4$
$a_8 = -16384$
Explicit: $a_n = -4^{n-1}$

1725) Common Ratio: $r = -4$
$a_8 = 49152$
Explicit: $a_n = -3 \cdot (-4)^{n-1}$

1726) Common Ratio: $r = -3$
$a_8 = 2187$
Explicit: $a_n = -(-3)^{n-1}$

1727) Common Ratio: $r = -4$
$a_8 = 16384$
Explicit: $a_n = -(-4)^{n-1}$

1728) Common Ratio: $r = 4$
$a_8 = 65536$
Explicit: $a_n = 4 \cdot 4^{n-1}$

1729) Common Ratio: $r = 4$
$a_8 = -32768$
Explicit: $a_n = -2 \cdot 4^{n-1}$

1730) Common Ratio: $r = -3$
$a_8 = 4374$
Explicit: $a_n = -2 \cdot (-3)^{n-1}$

1731) Common Ratio: $r = 5$
$a_8 = 78125$
Explicit: $a_n = 5^{n-1}$

1732) Common Ratio: $r = -4$
$a_8 = -16384$
Explicit: $a_n = (-4)^{n-1}$

1733) Not geometric

1734) Not geometric

1735) Not geometric

1736) Common Ratio: $r = -3$
$a_8 = 2187$
Explicit: $a_n = -(-3)^{n-1}$

1737) Not geometric

1738) Common Ratio: $r = 4$
$a_8 = -16384$
Explicit: $a_n = -4^{n-1}$

1739) Common Ratio: $r = -2$
$a_8 = 256$
Explicit: $a_n = -2 \cdot (-2)^{n-1}$

1740) Common Ratio: $r = -3$
$a_8 = 4374$
Explicit: $a_n = -2 \cdot (-3)^{n-1}$

1741) -1092

1742) -1094

1743) -262143

1744) -508

1745) -189

1746) -1533

1747) -13120

1748) 26660

1749) 508

1750) 1020

1751) -651042

1752) -9331

1753) -26042

1754) -11718

1755) -510

1756) -9831

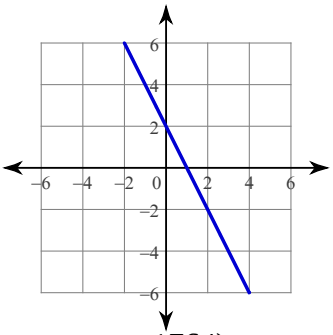
1757) -4095

1758) -349524

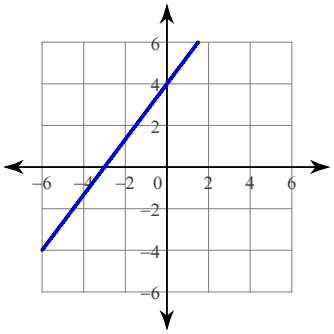
1759) -390624

1760) -728

1761)



1762)



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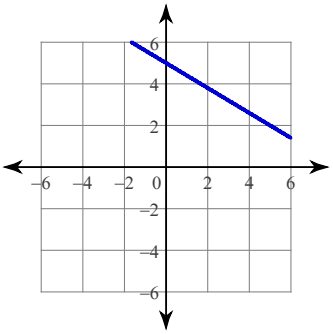

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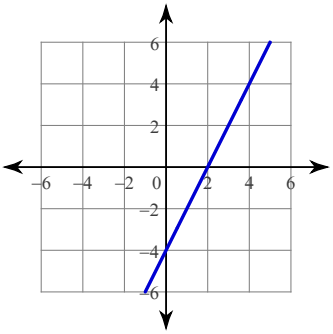

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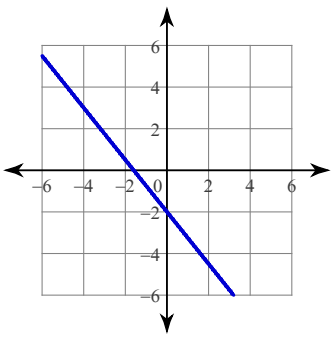

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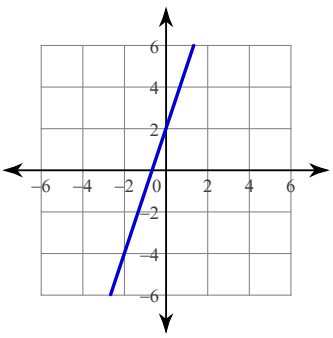

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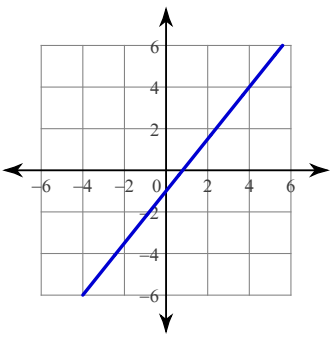

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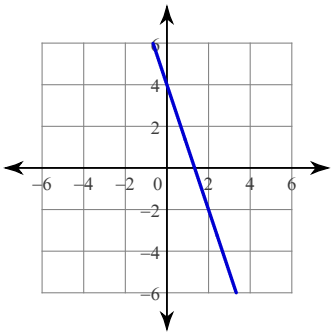

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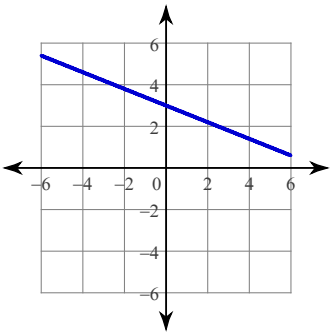

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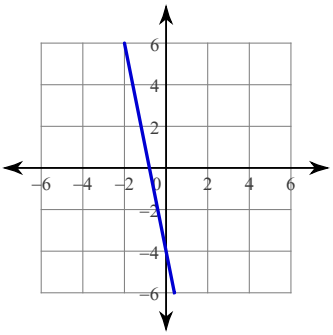

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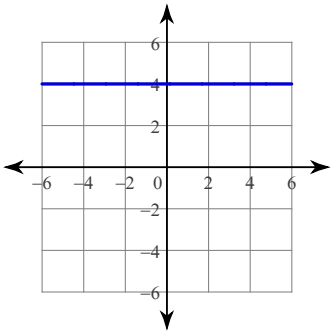

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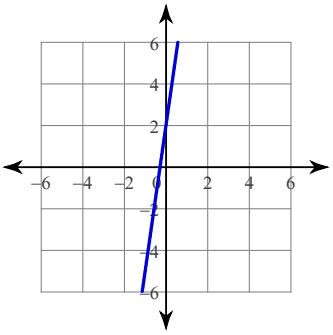

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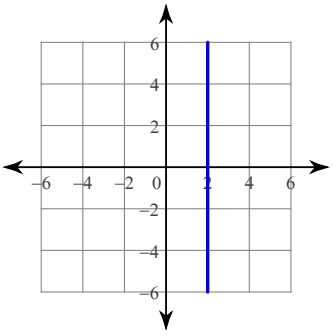

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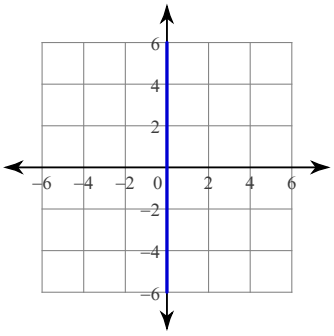

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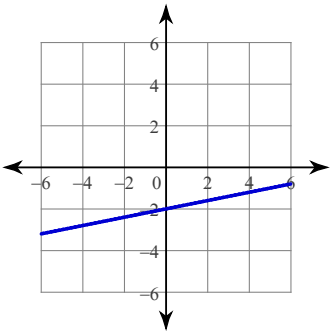

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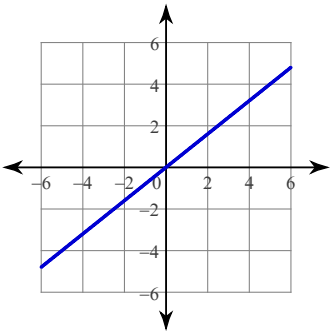

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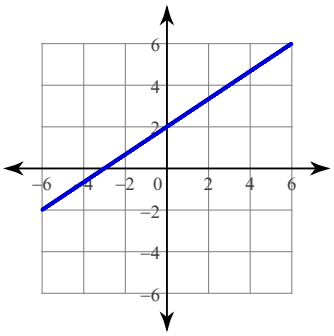

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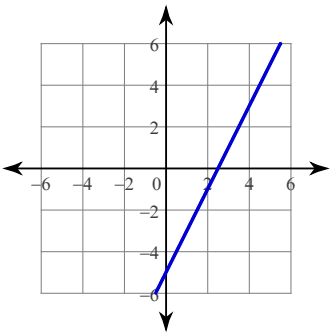

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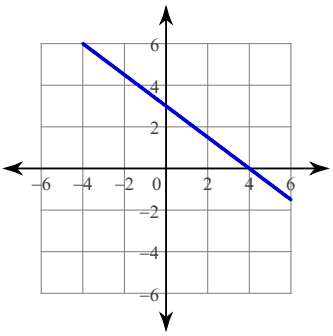

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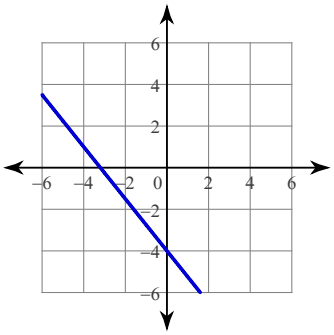

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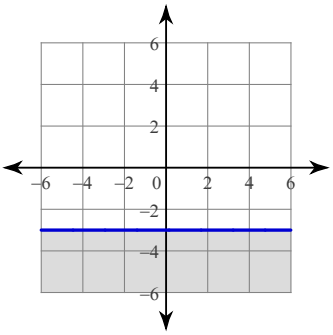

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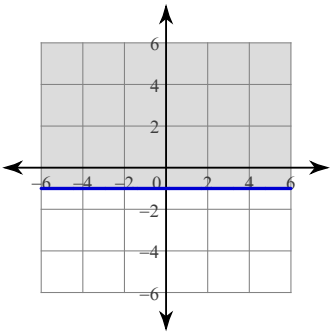

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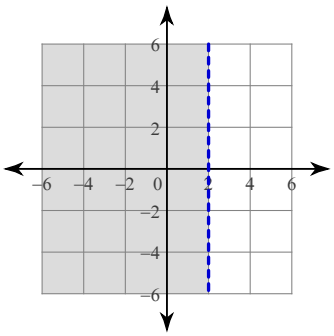

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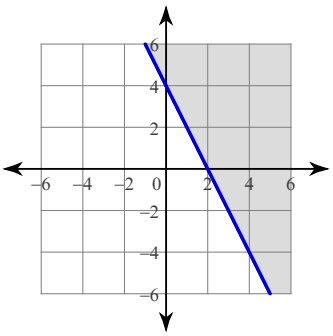

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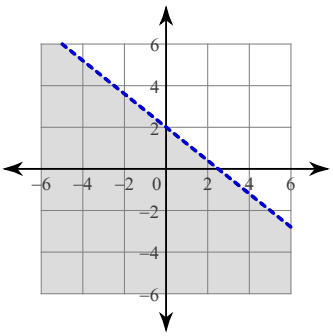

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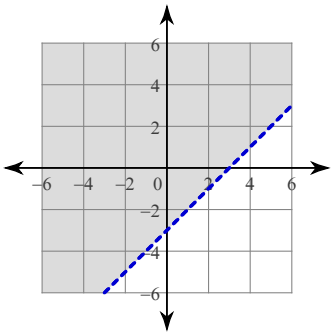

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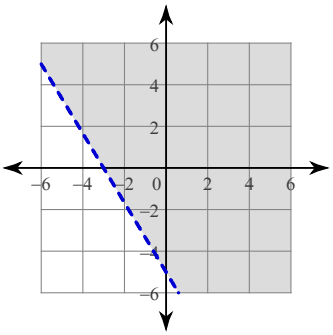

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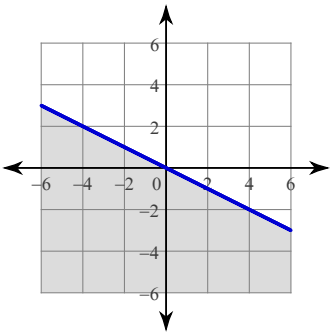

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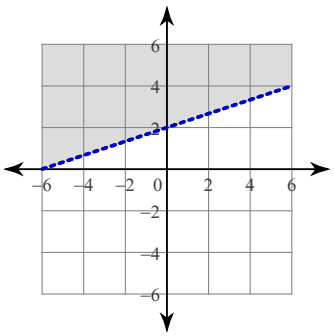

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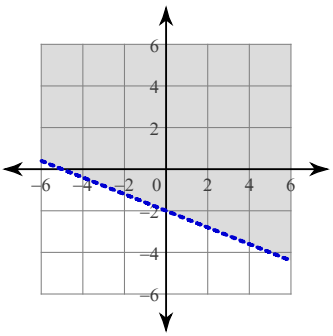

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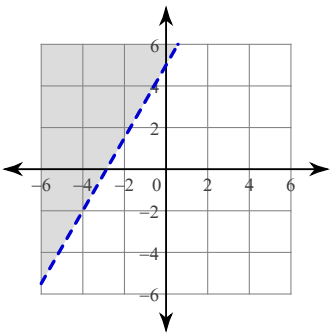

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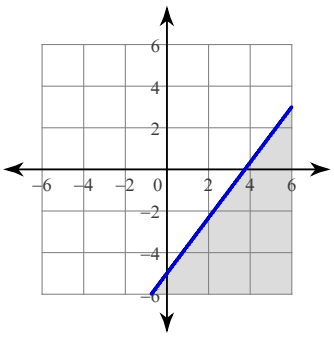

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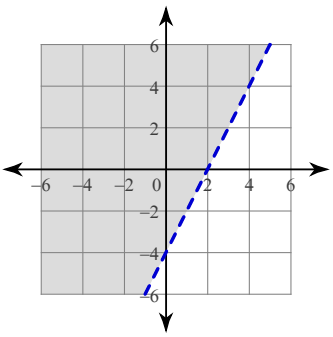

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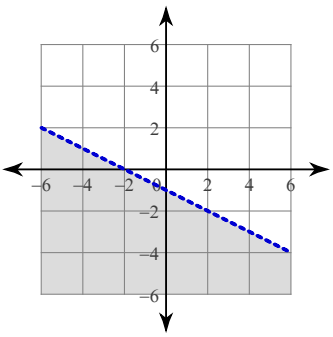

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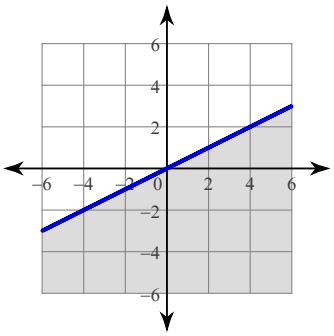

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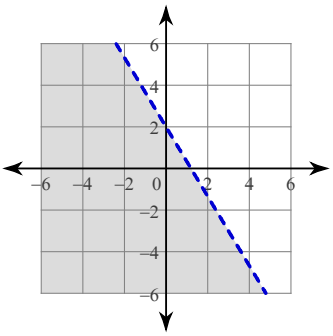

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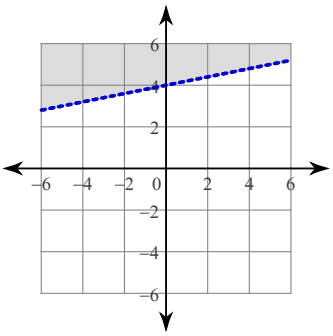

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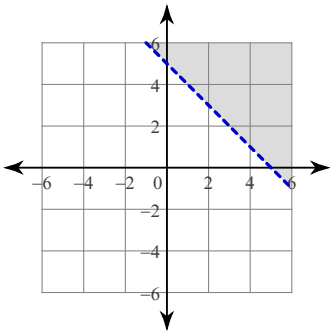

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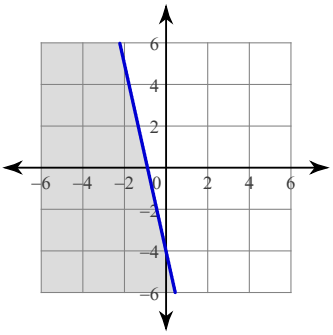

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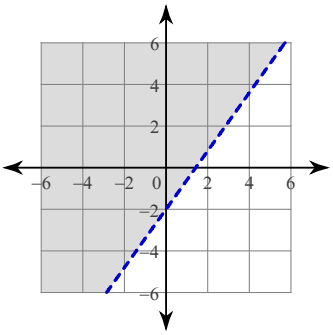

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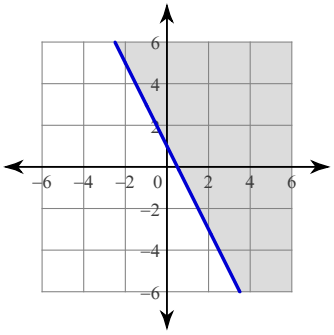

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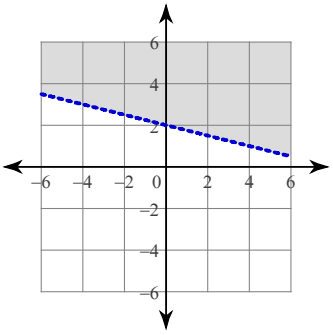

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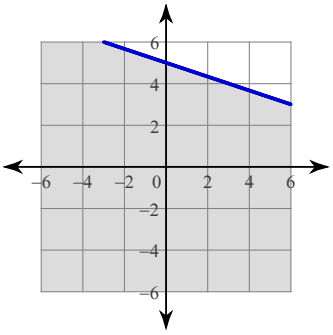

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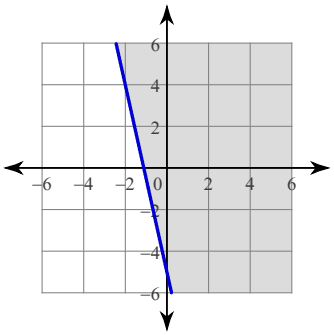

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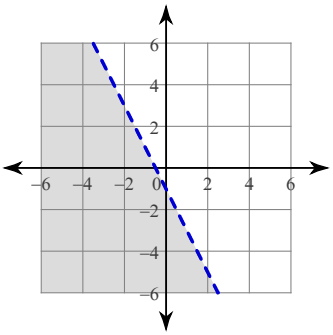

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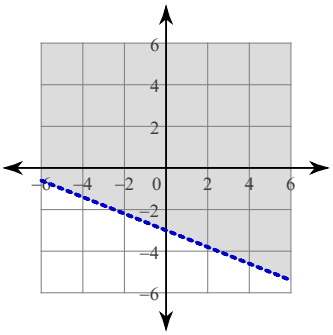

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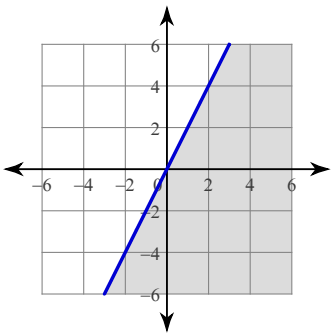

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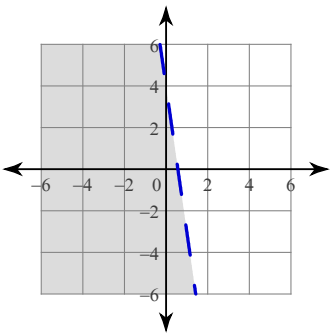

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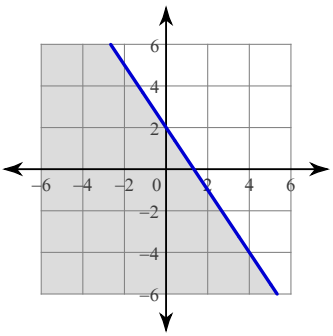

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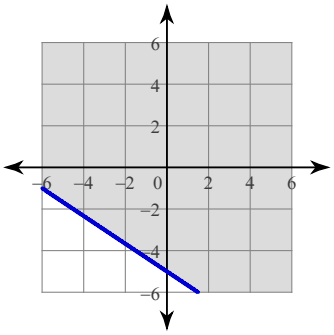

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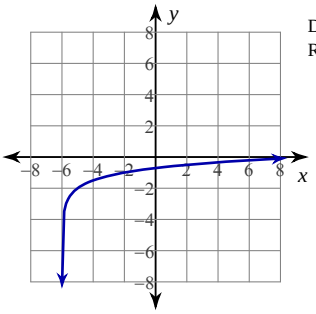

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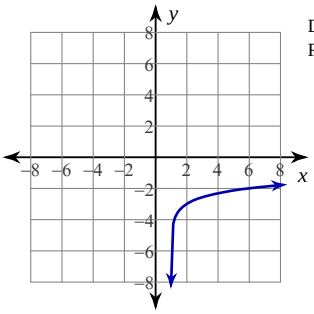
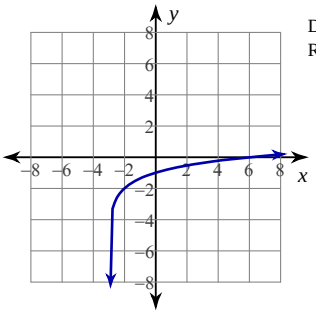
Range: All reals

1812)



Domain: $x > 1$
Range: All reals

1813)



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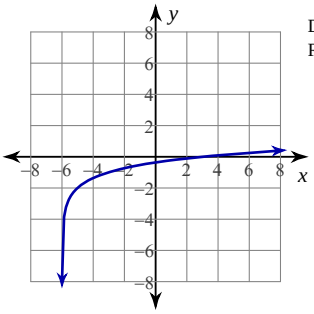
1814)



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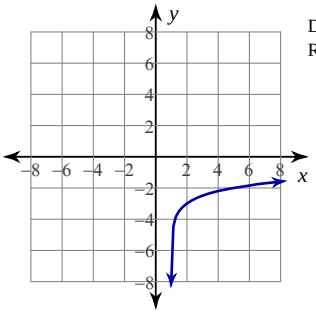
1815)



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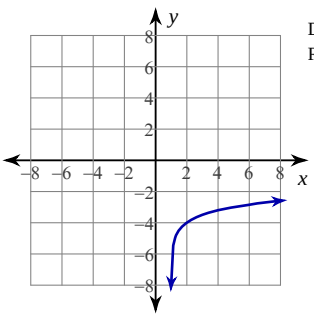

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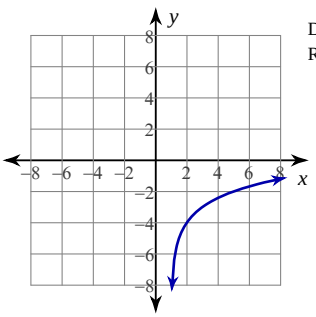

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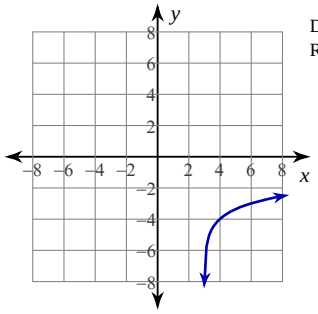
1818)



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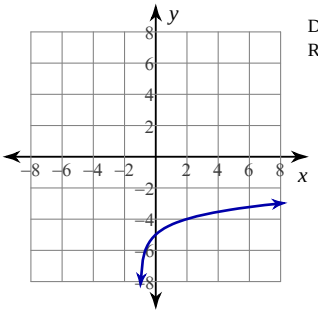
1819)



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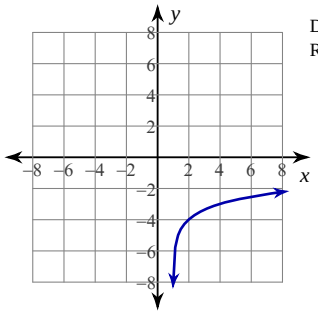

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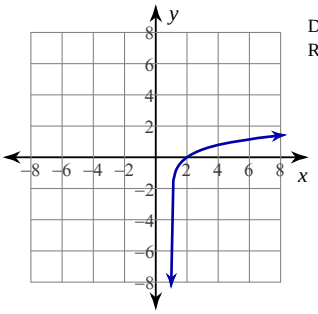

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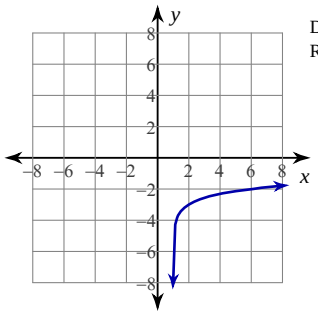

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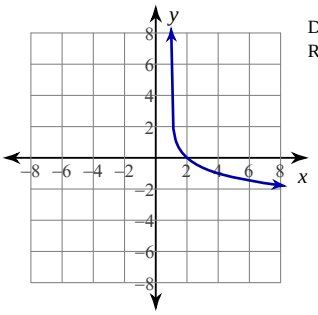

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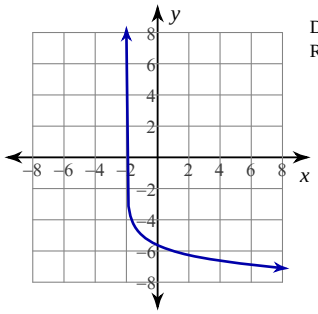

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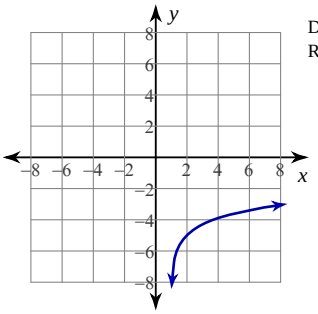

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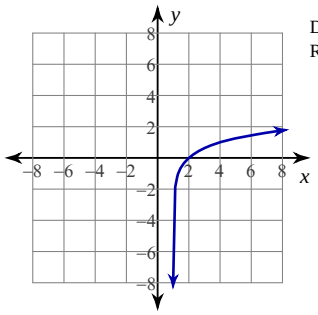

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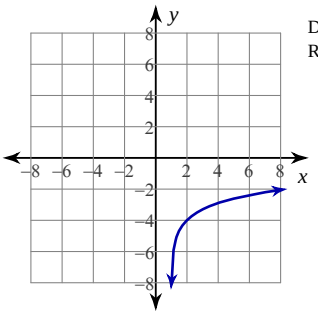

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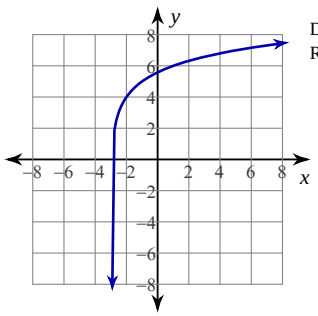
1828)



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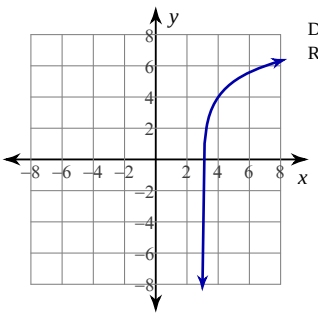
1829)



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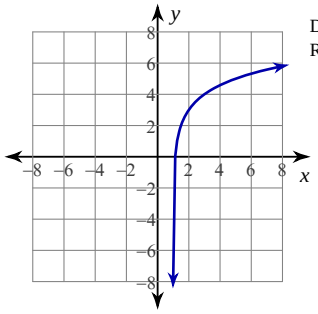

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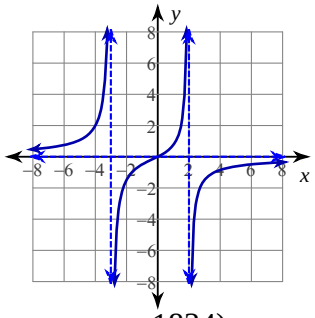

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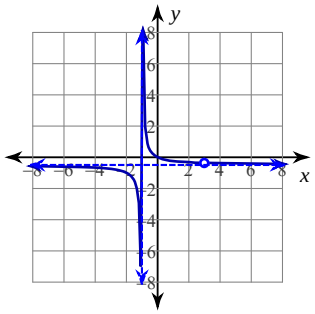

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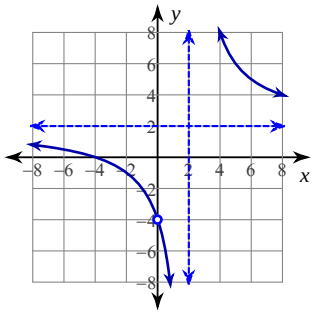

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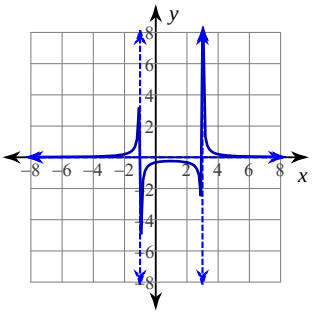

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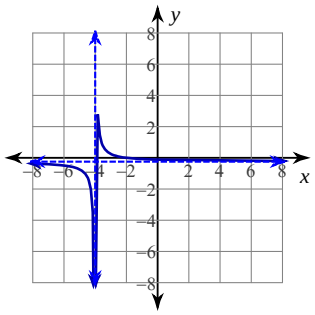

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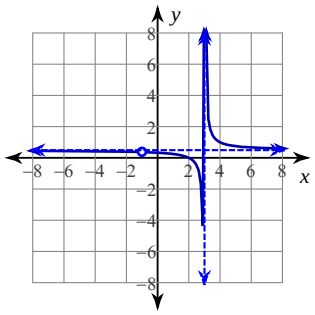

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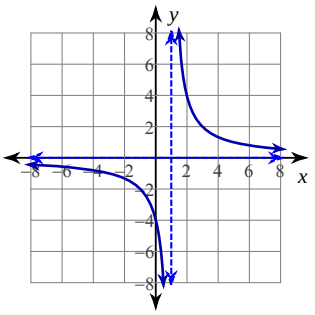

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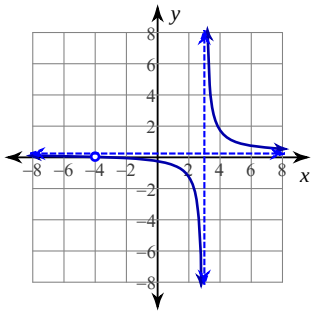

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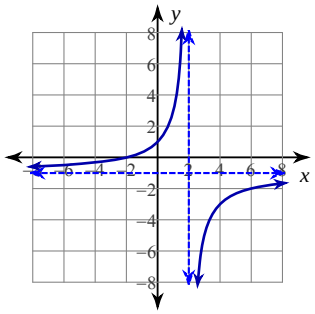

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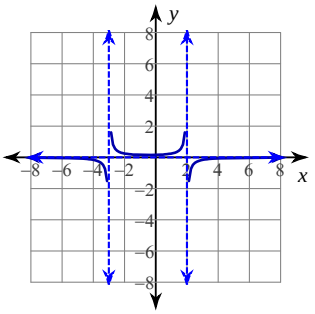

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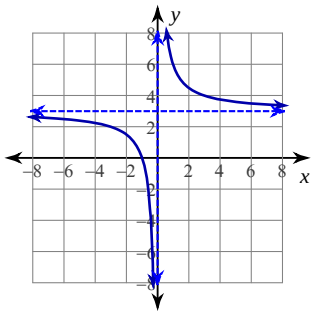

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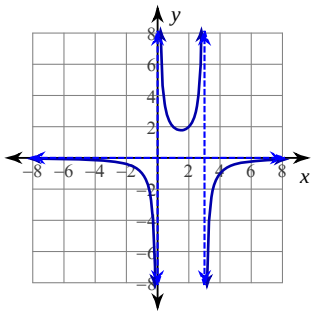

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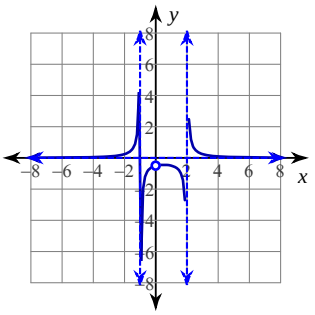

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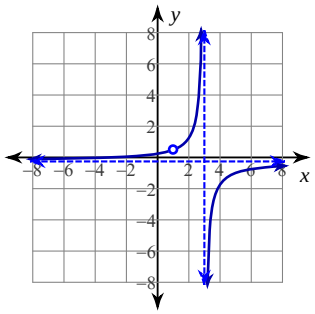

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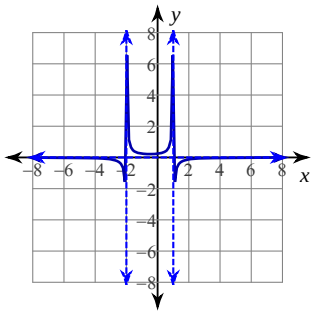

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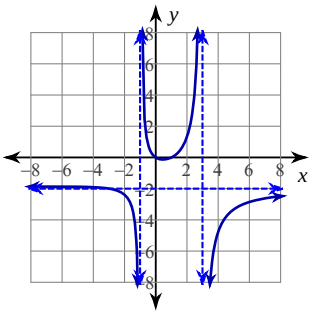

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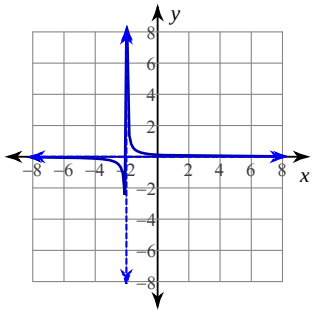

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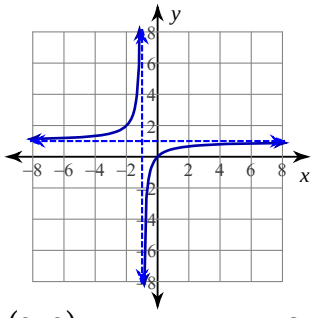

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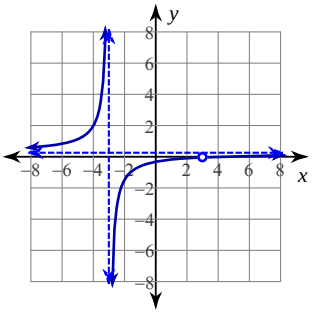

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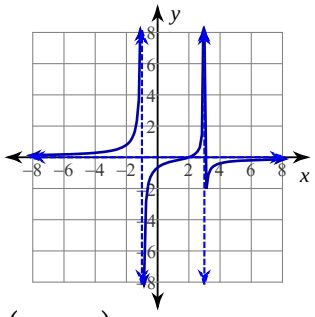
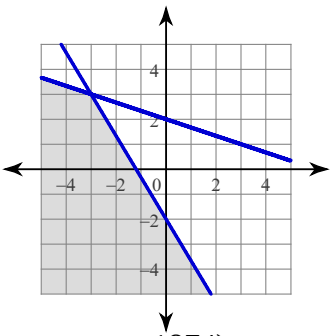


1851) $(2, 2)$

1852) $(4, -4)$

1853) $(-1, -2)$
1854) $(1, 3)$
1855) $(3, -3)$
1856) $(-1, -2)$
1857) $(-2, 4)$
1858) $(2, -2)$
1859) No solution
1860) No solution
1861) $(2, 1)$
1862) $(-1, -2)$
1863) $(-3, 4)$
1864) $(-1, -2)$
1865) $(2, 2)$
1866) $(-4, -4)$
1867) $(-2, -1)$
1868) $(1, 3)$
1869) No solution
1870) $(-3, -2)$

1871)



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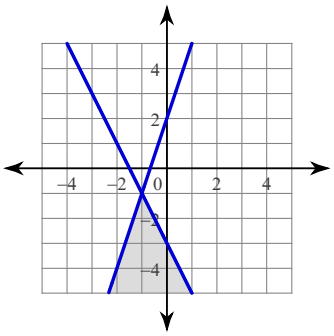
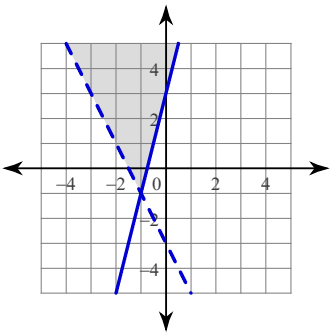
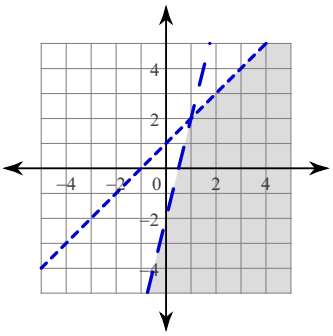


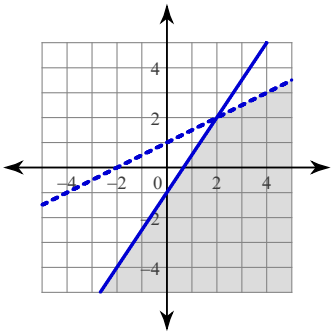
1873)



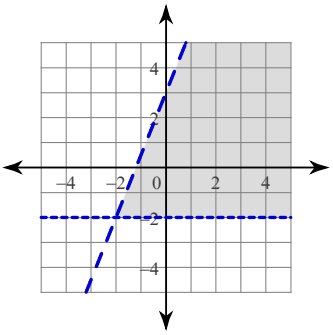
1874)



1875)



1876)



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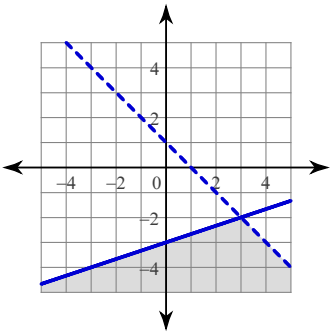

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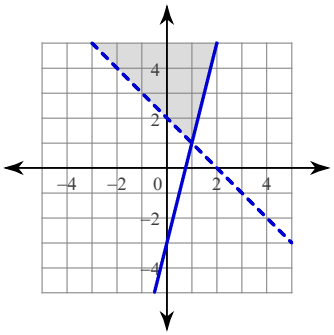

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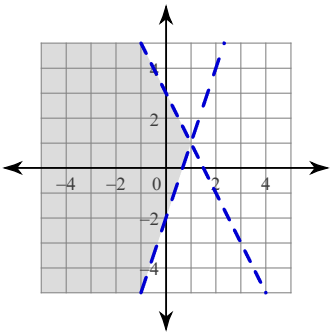

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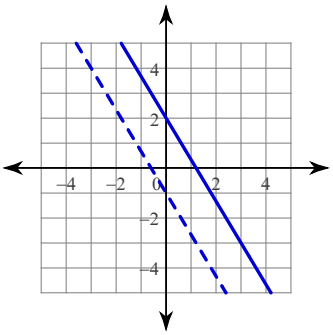

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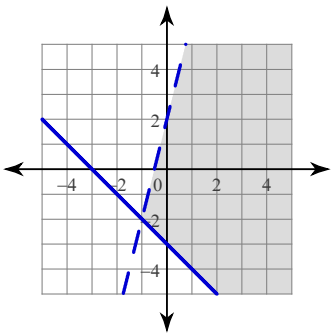

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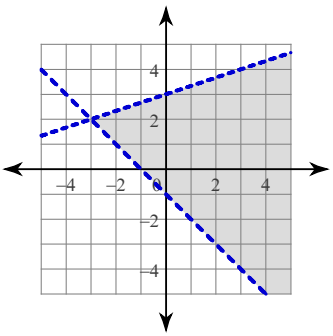

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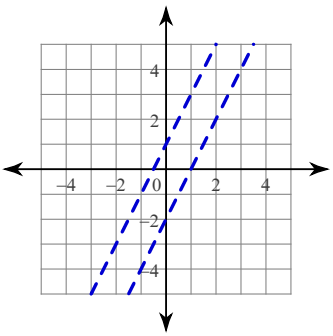

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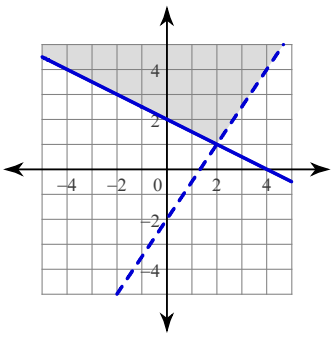
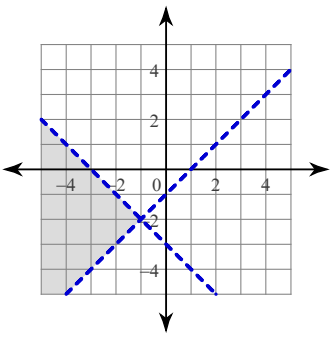


1885)



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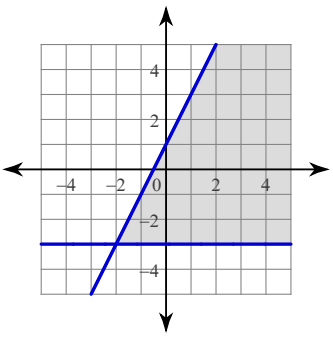

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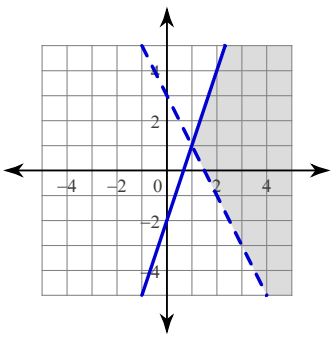

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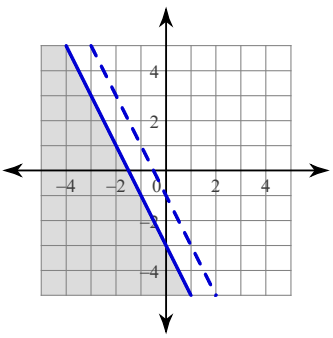

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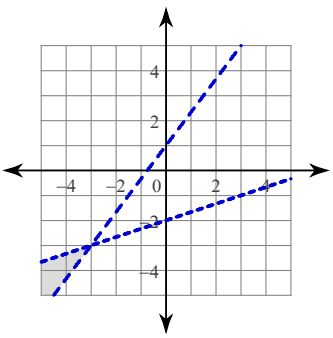

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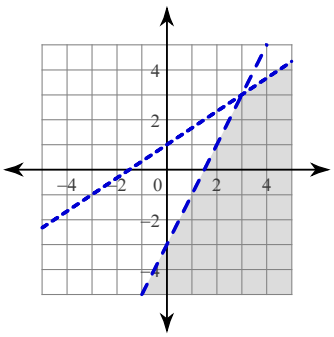

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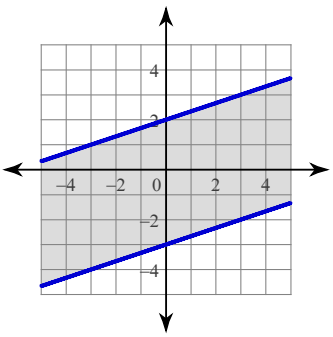
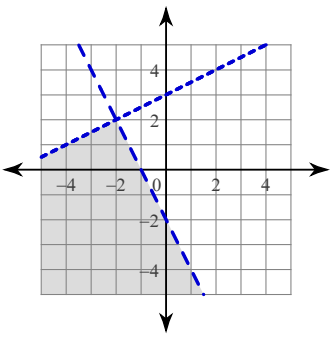


1892)



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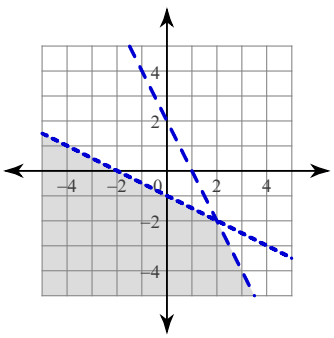

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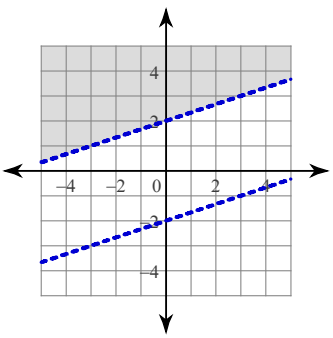

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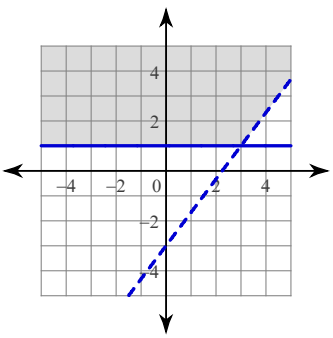

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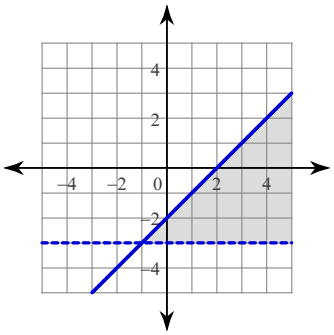

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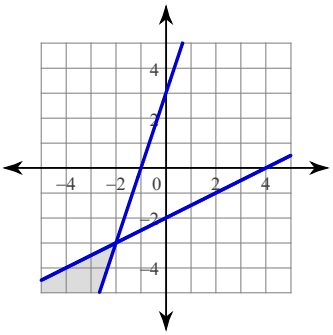

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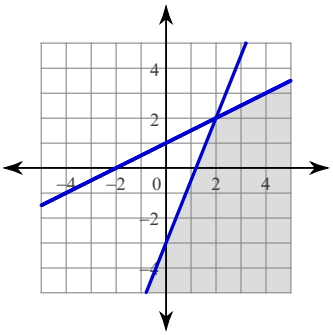

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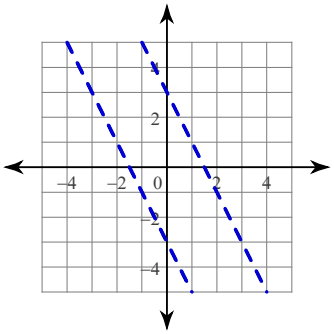

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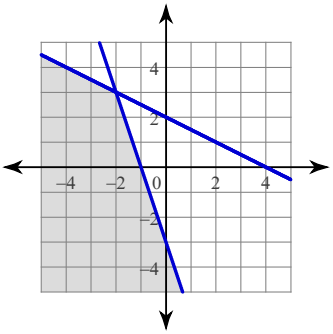

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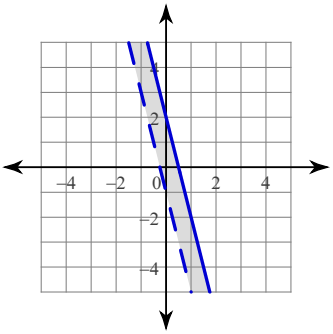

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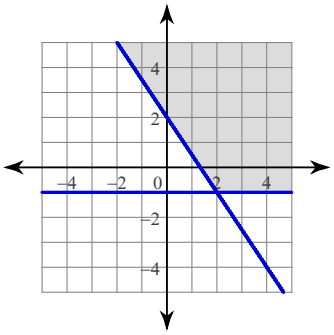

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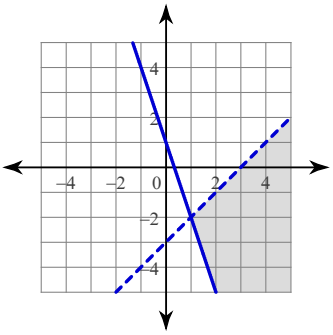

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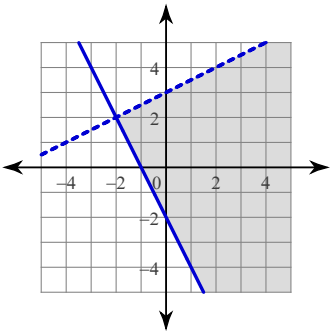

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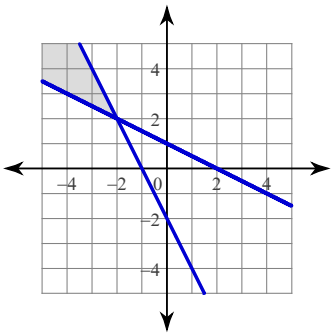

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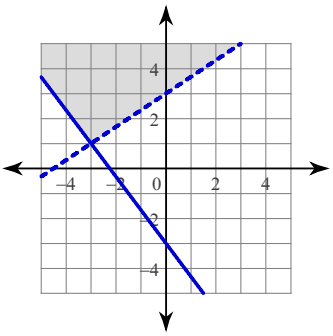

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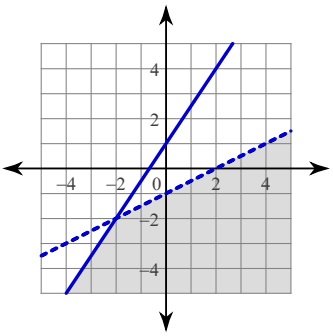
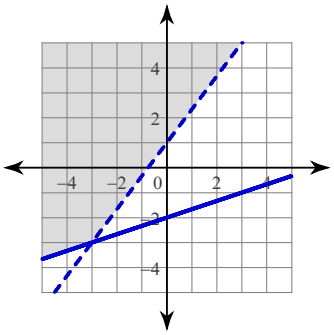


1908)



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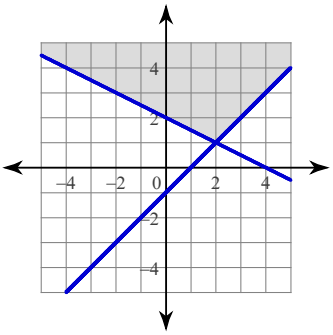

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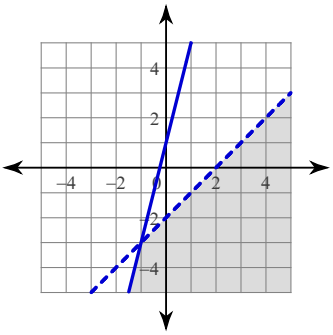
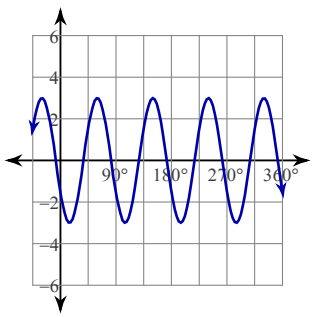


1911)



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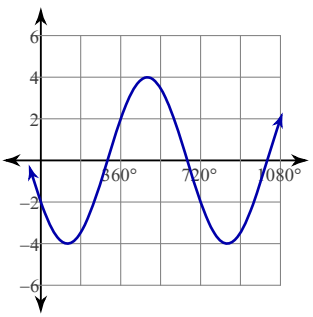

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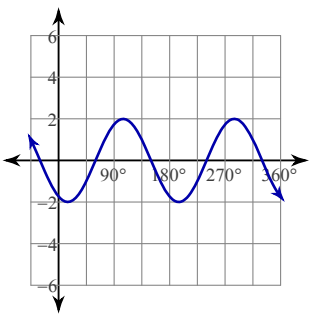

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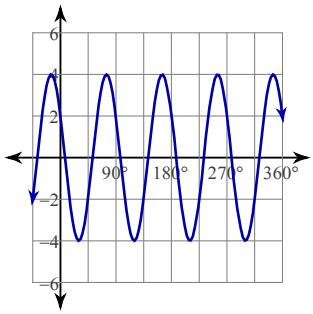

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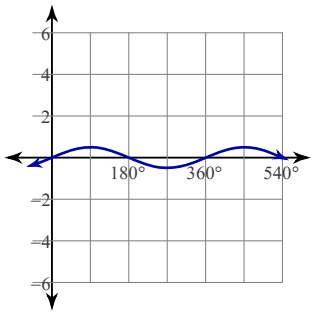

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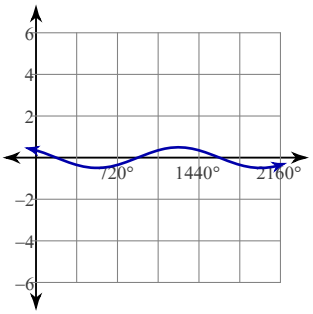

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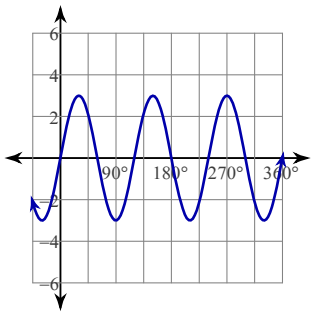
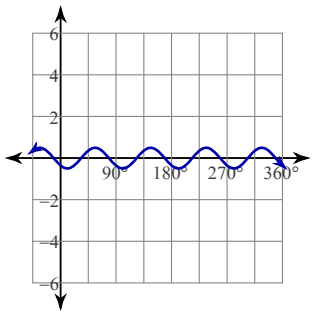


1918)



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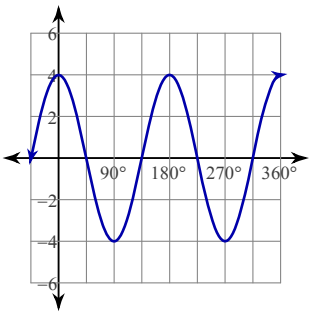

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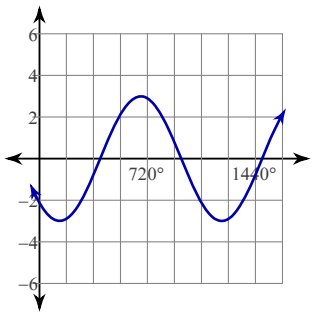

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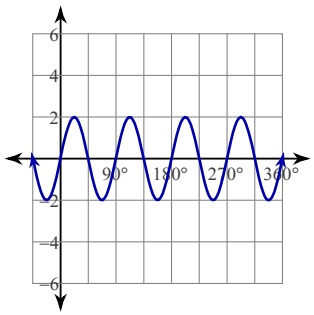

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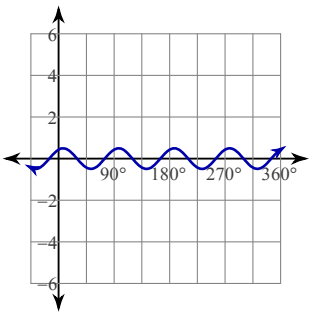

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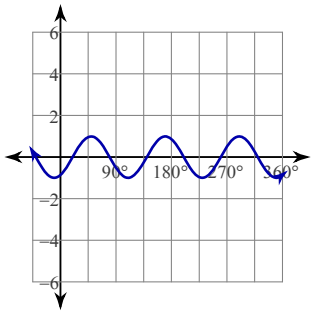

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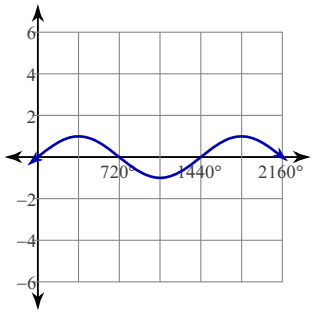

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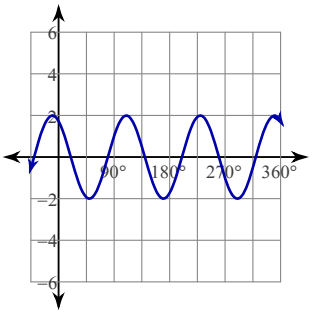

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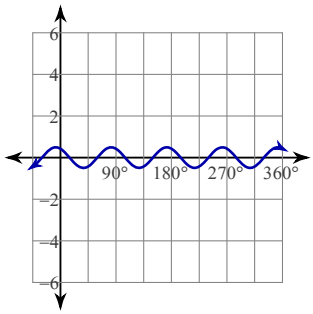

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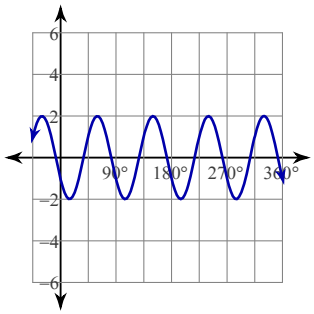
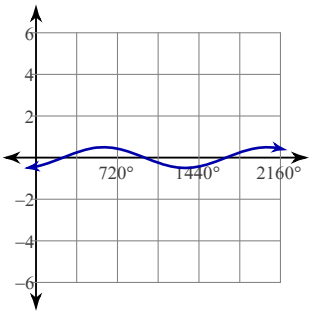
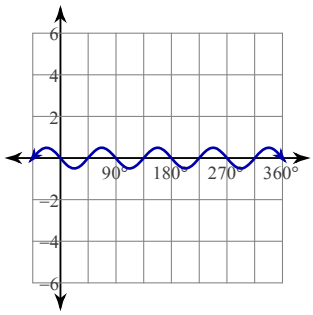


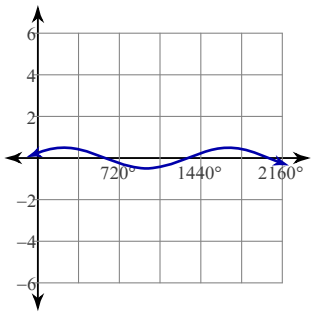
1928)



1929)



1930)



1931) $m\angle C = 107.6°$, $m\angle A = 23.4°$, $m\angle B = 49°$

1932) $m\angle C = 24.4°$, $m\angle A = 66.6°$, $b = 31.6$ yd

1933) $m\angle A = 21.5°$, $m\angle B = 108.7°$, $m\angle C = 49.8°$

1934) $m\angle A = 17.3°$, $m\angle B = 47.7°$, $c = 24.5$ yd

1935) $m\angle B = 62.8°$, $m\angle C = 46.3°$, $m\angle A = 70.9°$

1936) $m\angle B = 104°$, $m\angle C = 43.7°$, $m\angle A = 32.3°$

1937) $m\angle A = 19.8°$, $m\angle B = 62.2°$, $c = 29.1$ in
1938) $m\angle C = 46.3°$, $m\angle A = 112.5°$, $m\angle B = 21.2°$
1939) $m\angle C = 40.8°$, $m\angle A = 60.6°$, $m\angle B = 78.6°$
1940) $m\angle A = 39.4°$, $m\angle B = 21°$, $c = 32.7$ yd
1941) $m\angle C = 31°$, $m\angle A = 27°$, $m\angle B = 122°$
1942) $m\angle C = 51.3°$, $m\angle A = 69.5°$, $m\angle B = 59.2°$
1943) $m\angle B = 67.4°$, $m\angle C = 53.1°$, $m\angle A = 59.5°$
1944) $m\angle B = 119.4°$, $m\angle C = 22.8°$, $m\angle A = 37.8°$
1945) $m\angle A = 63.9°$, $m\angle B = 68.5°$, $m\angle C = 47.6°$
1946) $m\angle B = 59.3°$, $m\angle C = 40.7°$, $a = 33.2$ m
1947) $m\angle A = 41.7°$, $m\angle B = 37.3°$, $c = 32.4$ ft
1948) $m\angle A = 64.6°$, $m\angle B = 60.4°$, $c = 24.5$ mi
1949) $m\angle C = 30.4°$, $m\angle A = 107.2°$, $m\angle B = 42.4°$
1950) $m\angle C = 109.5°$, $m\angle A = 44°$, $m\angle B = 26.5°$

1951) 30°
1952) 57.2°
1953) 30°
1954) 36.1°
1955) 30°
1956) 38.9°
1957) 23°
1958) 53.7°
1959) 29.9°
1960) 15°
1961) 28°
1962) 23°
1963) 20°
1964) 17°
1965) 16°
1966) 61°
1967) 53.1°
1968) 13°
1969) 24°
1970) 26°

1971) $y = 2x - 3$
1972) $y = -3x$
1973) $y = -\frac{3}{4}x + 1$
1974) $y = \frac{1}{2}x + 3$
1975) $y = -\frac{7}{4}x + 5$
1976) $y = -\frac{1}{2}x - 3$
1977) $y = \frac{1}{3}x - 5$
1978) $y = -x + 1$
1979) $y = -4x + 2$
1980) $y = \frac{2}{3}x - 1$

1981) 2.099
1982) 2.276
1983) 3.664
1984) 5.285
1985) 1.052
1986) 1.173
1987) 0.529
1988) 2.095
1989) 0.827
1990) 1.131

1991) $\log_3\left(7^4 \cdot 6^5\right)$
1992) $\log_2\left(y^{12}x^4\right)$
1993) $\ln\left(b^3a^6\right)$
1994) $\ln\frac{x^{15}}{y^5}$
1995) $\log_9\sqrt[3]{zyx}$
1996) $\log_6\left(b^6a^5\right)$
1997) $\log_7\sqrt[3]{wvu}$
1998) $\log_6\frac{10^4}{3^2}$
1999) $\log_4\left(b^4a^3\right)$
2000) $\log_5\sqrt[3]{wvu}$

2001) 2
2002) 3
2003) 1
2004) –2
2005) 2
2006) –2
2007) 2
2008) 3
2009) 6
2010) –3
2011) 25
2012) 6
2013) 4
2014) 14
2015) 1
2016) 1
2017) 48
2018) 30
2019) 18
2020) 24

2021) $\frac{\log_8 x}{3} + \frac{\log_8 y}{3} + \frac{\log_8 z}{3}$

2022) $3\log_8 a + 18\log_8 b$
2023) $2\log_7 6 + 2\log_7 5$
2024) $18\log_6 x - 6\log_6 y$
2025) $4\log_5 8 + 2\log_5 11$
2026) $16\log_4 8 - 4\log_4 7$
2027) $\frac{\log_3 x}{2} + \frac{\log_3 y}{2} + \frac{\log_3 z}{2}$
2028) $3\log_3 u + 5\log_3 v$
2029) $90 - 5\log_2 3$
2030) $\frac{\log_5 x}{2} + \frac{\log_5 y}{2} + \frac{\log_5 z}{2}$
2031) $3\log_3 x - 9\log_3 y$
2032) $18 - 2\log_2 11$
2033) $\log_2 c + \frac{\log_2 a}{2} + \frac{\log_2 b}{2}$
2034) $6\log_9 3 - 24\log_9 10$
2035) $5\ln u - 2\ln v$
2036) $\log_8 7 + \frac{\log_8 11}{2} + \frac{\log_8 10}{2}$
2037) $3\log_7 x - 15\log_7 y$
2038) $5\log_5 3 - 2\log_5 2$
2039) $\log_6 7 + \frac{\log_6 3}{2} + \frac{\log_6 2}{2}$
2040) $6\log_5 u + 12\log_5 v$

2041) $14^{-2} = \frac{1}{196}$
2042) $3^{-4} = \frac{1}{81}$
2043) $18^{-2} = \frac{1}{324}$
2044) $11^2 = 121$
2045) $15^2 = 225$
2046) $7^3 = 343$
2047) $18^2 = 324$
2048) $14^0 = 1$

2049) $19^2 = 361$

2050) $\left(\frac{1}{15}\right)^2 = \frac{1}{225}$

2051) -0.1

2052) -2.1

2053) -1.4

2054) -1.3

2055) 0.2

2056) 3.8

2057) -1.9

2058) 1.8

2059) 2.1

2060) -0.2

2061) $\begin{bmatrix} 6 & 2 & -4 \\ 5 & 1 & -4 \end{bmatrix}$

2062) $\begin{bmatrix} -8 \\ 9 \\ 1 \\ 7 \end{bmatrix}$

2063) $\begin{bmatrix} -6 & 0 & 0 \end{bmatrix}$

2064) $\begin{bmatrix} 9 & 3 \\ -5 & 5 \\ 4 & -6 \end{bmatrix}$

2065) $\begin{bmatrix} 4 & 1 & 11 & 12 \end{bmatrix}$

2066) $\begin{bmatrix} 7 \\ -3 \end{bmatrix}$

2067) $\begin{bmatrix} 5 & 0 & 4 \end{bmatrix}$

2068) $\begin{bmatrix} -4 & 9 & 0 \end{bmatrix}$

2069) $\begin{bmatrix} 3 & 1 \\ -2 & -8 \end{bmatrix}$

2070) $\begin{bmatrix} 7 & -4 \end{bmatrix}$

2071) $\begin{bmatrix} 11 & 7 & 20 \\ 4 & 2 & 8 \end{bmatrix}$

2072) $\begin{bmatrix} -5 & -21 \\ -20 & -4 \end{bmatrix}$

2073) $\begin{bmatrix} 8 & 8 \end{bmatrix}$

2074) $\begin{bmatrix} 20 & -11 \\ -36 & 19 \end{bmatrix}$

2075) $\begin{bmatrix} 33 & 19 & 16 \\ -18 & 2 & -8 \end{bmatrix}$

2076) $\begin{bmatrix} -15 & -18 & 30 \\ 10 & -24 & -30 \end{bmatrix}$

2077) $\begin{bmatrix} 20 & -8 \\ -22 & -11 \end{bmatrix}$

2078) $\begin{bmatrix} 25 & 7 \end{bmatrix}$

2079) $\begin{bmatrix} -6 & -5 \\ -30 & -25 \\ 24 & 20 \end{bmatrix}$

2080) $\begin{bmatrix} 0 & 0 & 0 \\ -21 & -24 & 15 \end{bmatrix}$

2081) $\begin{bmatrix} -15 & -15 \\ 0 & 0 \end{bmatrix}$

2082) $\begin{bmatrix} -6 \\ -3 \\ -12 \\ 15 \end{bmatrix}$

2083) $\begin{bmatrix} 0 & 25 \\ 5 & 20 \\ 30 & 5 \end{bmatrix}$

2084) $\begin{bmatrix} 5 \\ 0 \\ 30 \\ -20 \end{bmatrix}$

2085) $\begin{bmatrix} -6 & -4 & -2 \end{bmatrix}$

2086) $\begin{bmatrix} 4 & -4 \end{bmatrix}$

2087) $\begin{bmatrix} 2 & 0 \end{bmatrix}$

2088) $\begin{bmatrix} -2 & 11 \\ 0 & -9 \\ -8 & -4 \end{bmatrix}$

2089) $\begin{bmatrix} -4 \\ 6 \\ 2 \end{bmatrix}$

2090) $\begin{bmatrix} 3 & -4 \\ -4 & 3 \\ -10 & 4 \end{bmatrix}$

2091) $\begin{bmatrix} -10 \\ -10 \end{bmatrix}$

2092) $\begin{bmatrix} 20 & -12 & 16 \\ -12 & -12 & 0 \end{bmatrix}$

2093) $\begin{bmatrix} 24 & -4 \end{bmatrix}$

2094) $\begin{bmatrix} -4 & -12 & -16 \end{bmatrix}$

2095) $\begin{bmatrix} -3 & 0 & -18 & 6 \end{bmatrix}$

2096) $\begin{bmatrix} -5 & 10 & -15 \\ 30 & 10 & 25 \end{bmatrix}$

2097) $\begin{bmatrix} 15 \\ 0 \\ -15 \end{bmatrix}$

2098) $\begin{bmatrix} -10 & -5 \\ 10 & -25 \\ 10 & -5 \end{bmatrix}$

2099) $\begin{bmatrix} -24 & 24 & -20 & 0 \end{bmatrix}$

2100) $\begin{bmatrix} 30 & 0 & 20 \end{bmatrix}$

2101) $-\frac{1}{12}\begin{bmatrix} -4 & 4 \\ -6 & 9 \end{bmatrix}$

2102) $\frac{1}{16}\begin{bmatrix} -7 & -11 \\ -3 & -7 \end{bmatrix}$

2103) $\frac{1}{6}\begin{bmatrix} 4 & 5 \\ -6 & -6 \end{bmatrix}$

2104) $\frac{1}{2}\begin{bmatrix} 1 & 1 \\ 3 & 5 \end{bmatrix}$

2105) $-\frac{1}{8}\begin{bmatrix} 4 & 2 \\ 6 & 1 \end{bmatrix}$

2106) $-\frac{1}{10}\begin{bmatrix} -8 & 10 \\ -7 & 10 \end{bmatrix}$

2107) $-\frac{1}{19}\begin{bmatrix} 1 & -2 \\ -7 & -5 \end{bmatrix}$

2108) $-\frac{1}{12}\begin{bmatrix} -8 & -2 \\ -2 & 1 \end{bmatrix}$

2109) $-\frac{1}{16}\begin{bmatrix} 2 & 4 \\ 2 & -4 \end{bmatrix}$

2110) $-\frac{1}{7}\begin{bmatrix} 9 & 5 \\ 5 & 2 \end{bmatrix}$

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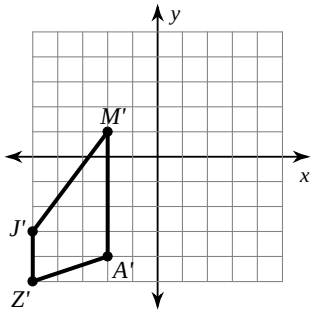

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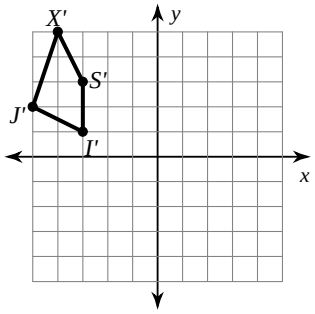

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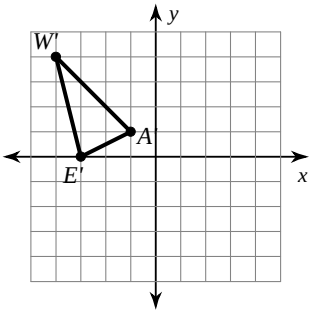

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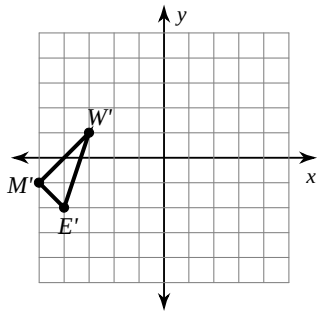

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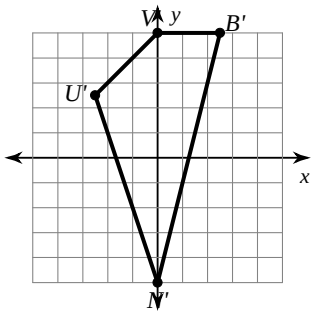

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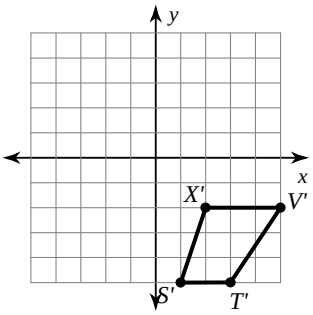

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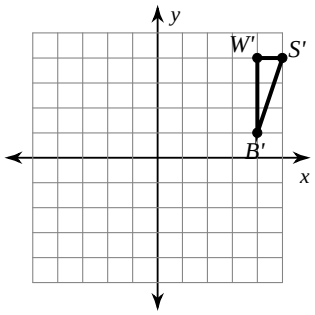

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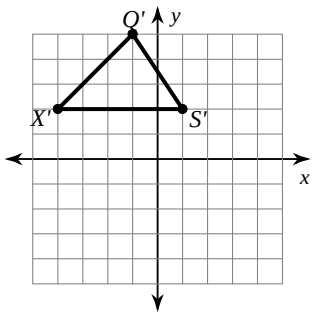

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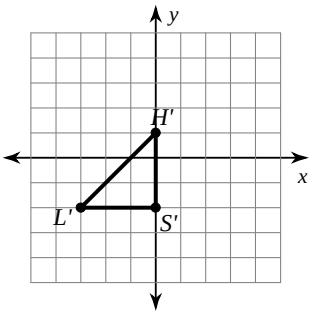

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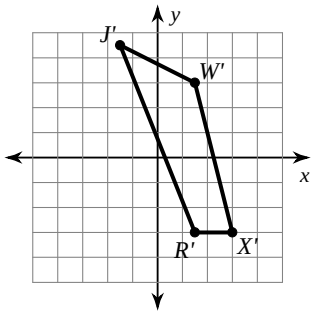

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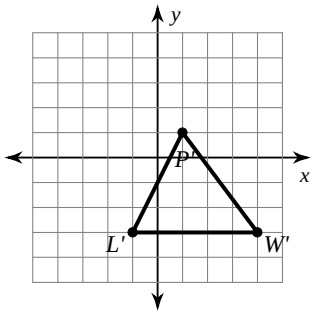

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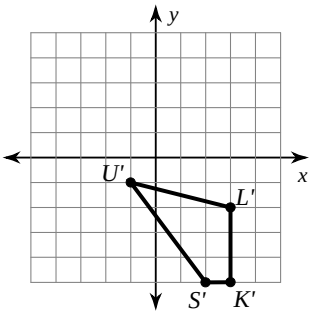

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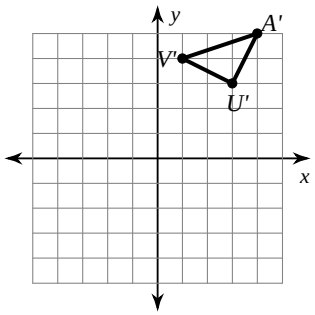

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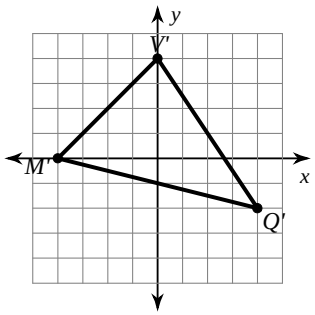

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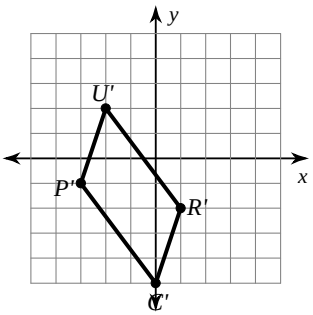

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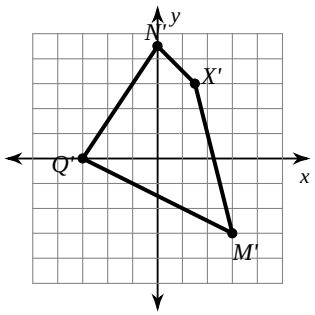

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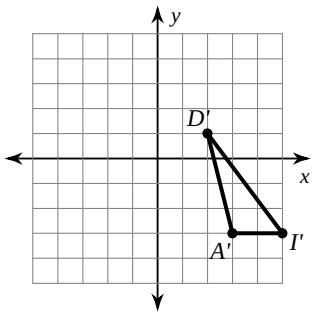

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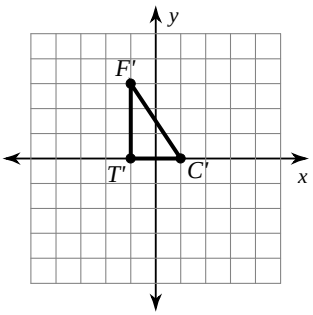

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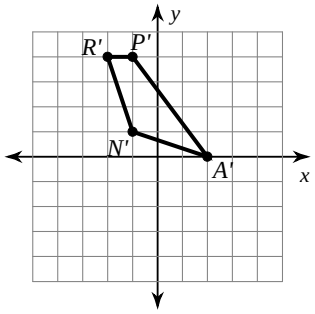

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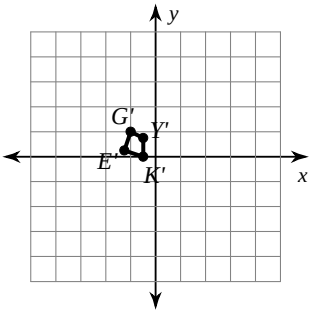

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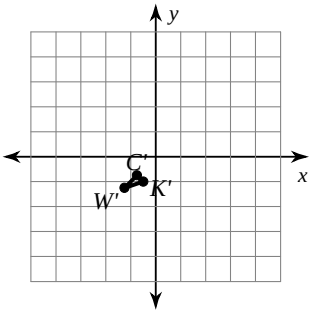

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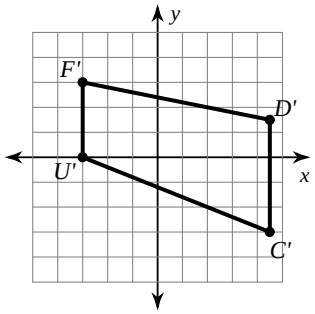

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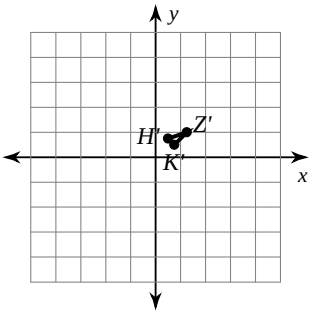

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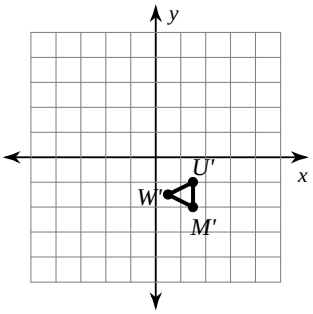

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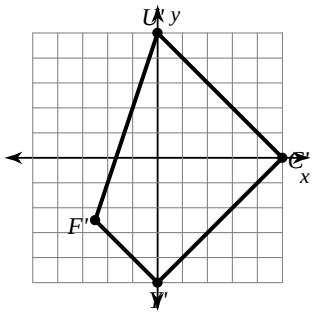

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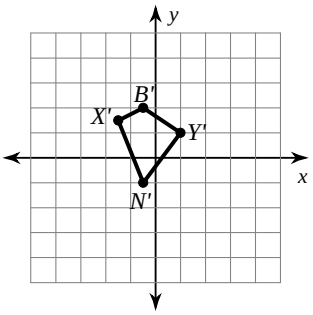

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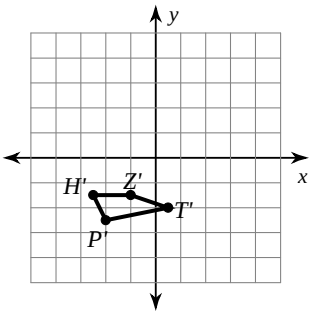

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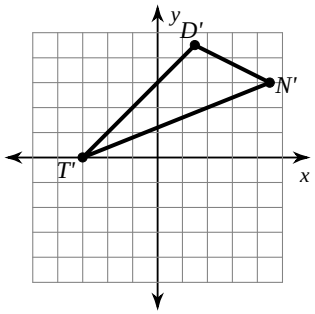

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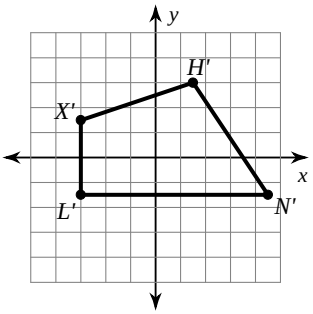

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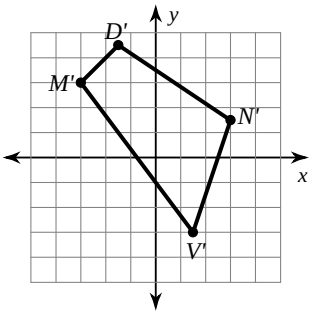

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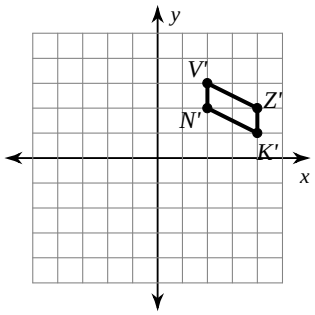

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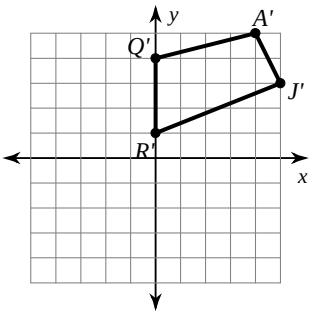

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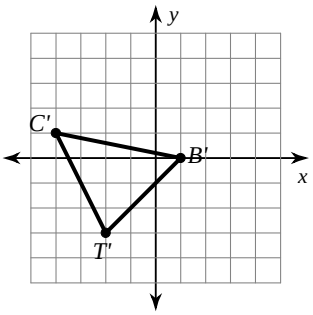

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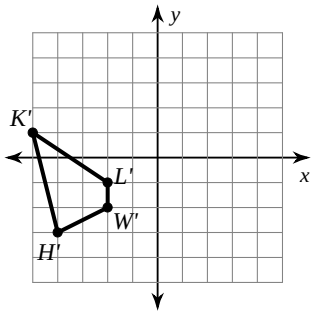

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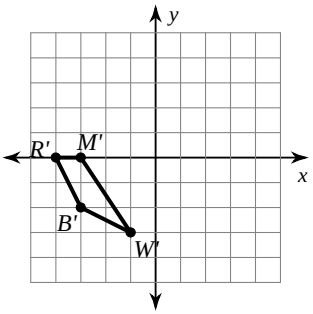

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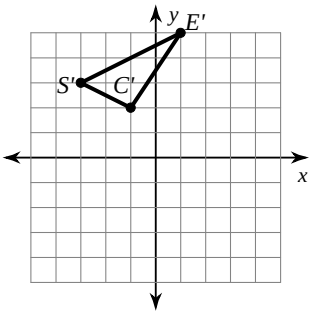

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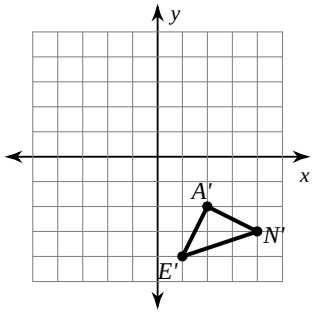

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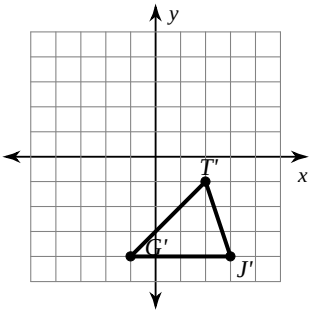

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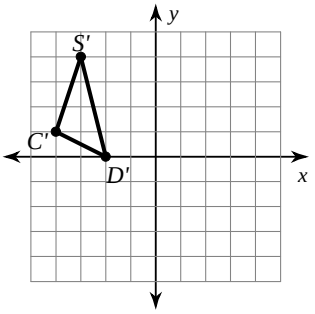

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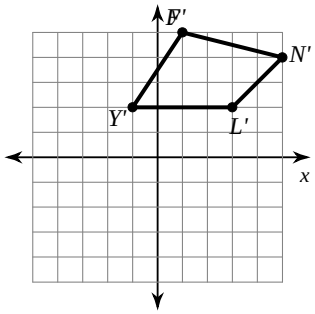

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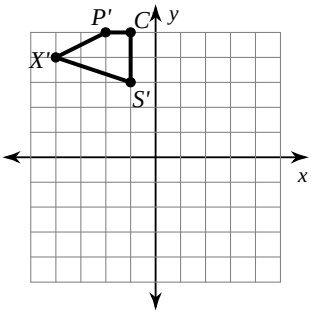

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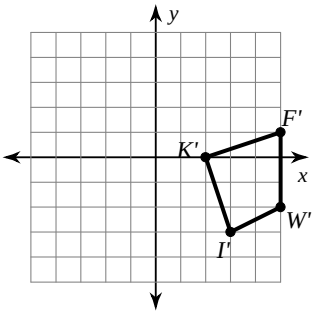

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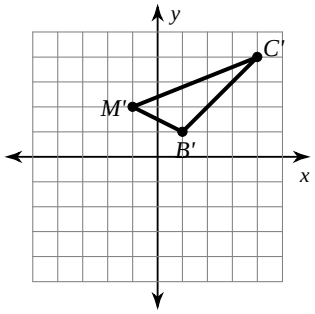

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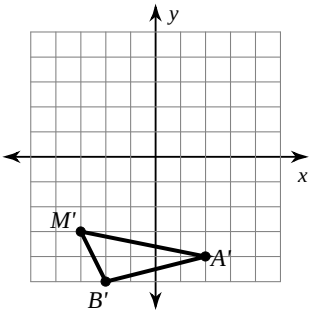

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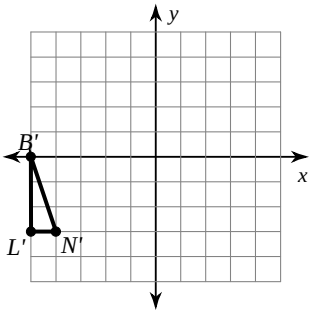

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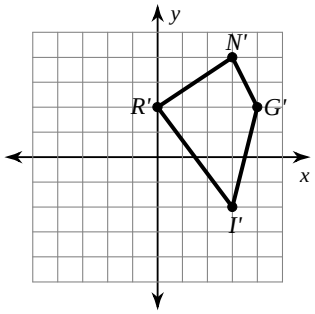

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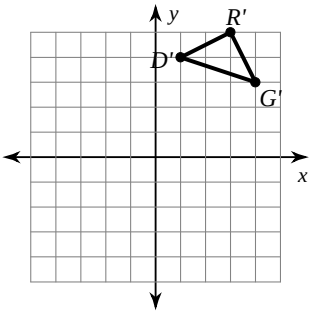

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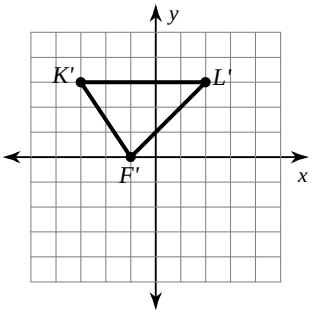

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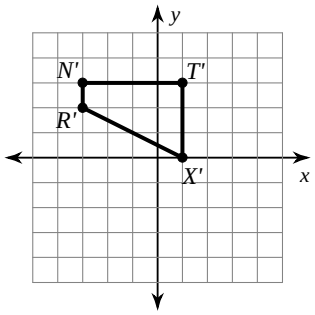

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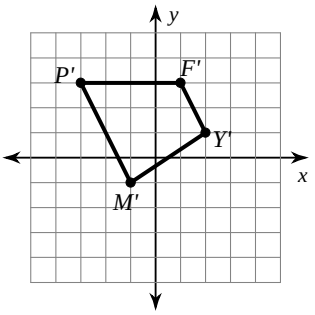

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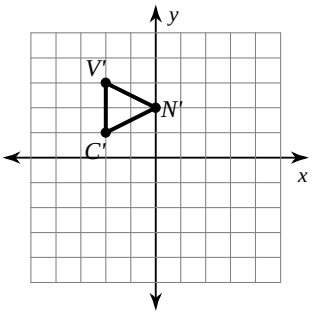

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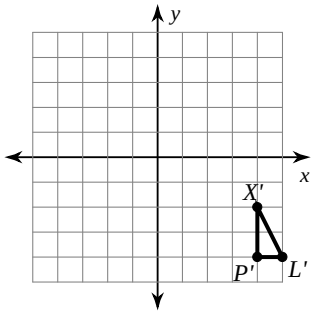

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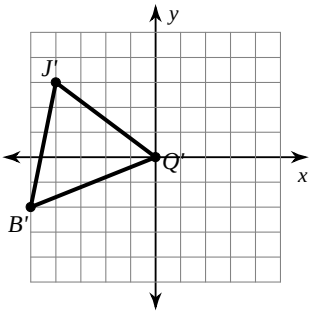

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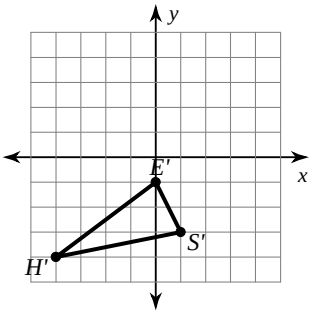
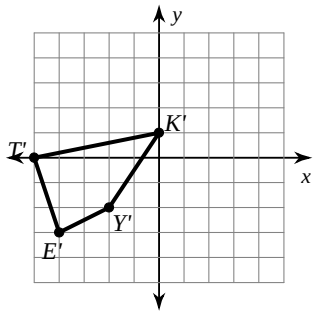
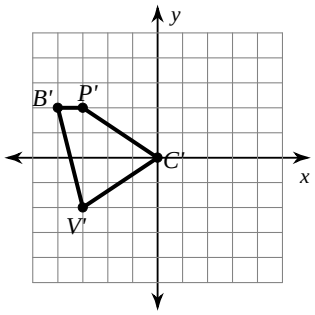
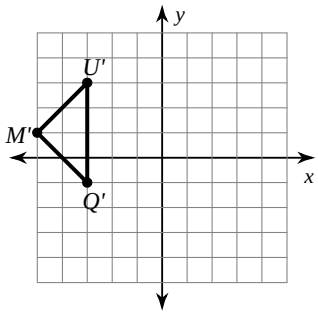
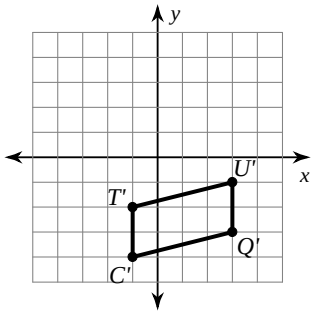
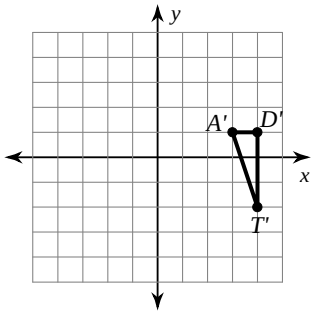


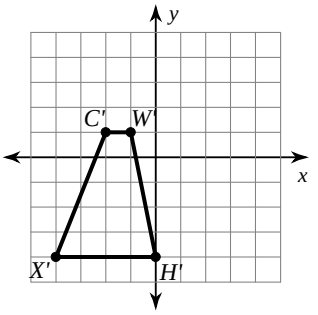
2165) 

2166) 

2167) 

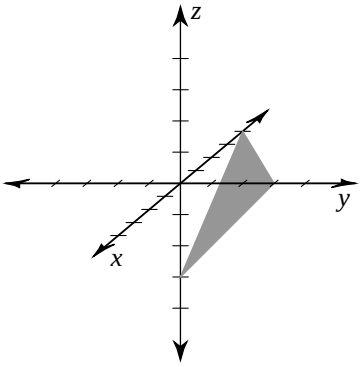
2168) 

2169) 

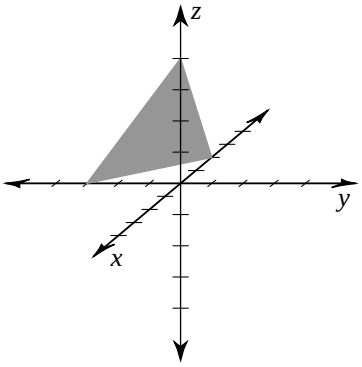
2170) 

2171) 85%
2172) 50%
2173) 12%
2174) 48%
2175) 64%
2176) 10%
2177) $16/lb
2178) 68%
2179) 41%
2180) 46%
2181) 70
2182) 56
2183) 31
2184) 15
2185) boat: 12 mph, current: 10 mph
2186) 82
2187) rose bush: $5, pot of ivy: $3
2188) pecan cheesecake: $15, apple cheesecake: $18
2189) hosta: $5, pot of ivy: $11
2190) 67
2191) 225 mph
2192) 35 mph
2193) 5 hours
2194) 9 hours
2195) 4 hours
2196) 10 hours
2197) 25 km/h
2198) 4 hours
2199) 5 hours
2200) 40 mph
2201) 39%
2202) 30%
2203) $3/lb
2204) $14/lb
2205) 76%
2206) 82%
2207) 43%
2208) 82%
2209) 42%
2210) 50%
2211) Van: 8, Bus: 58
2212) Van: 14, Bus: 48
2213) Van: 7, Bus: 39
2214) boat: 15 mph, current: 5 mph
2215) Van: 11, Bus: 26
2216) boat: 30 mph, current: 10 mph
2217) boat: 14 mph, current: 10 mph
2218) plane: 87 mph, wind: 29 mph
2219) plane: 78 mph, wind: 26 mph
2220) plane: 90 mph, wind: 30 mph
2221) $5n^2 - n - 6$
2222) $9a^2 + 15a - 14$
2223) $42x^2 - 31x + 4$
2224) $7k^2 + 59k + 24$
2225) $10x^2 + 30x - 40$
2226) $12x^2 + 34x + 10$
2227) $16m^2 + 24m + 8$
2228) $24n^2 - 6n - 9$
2229) $35x^2 - 89x + 56$
2230) $10p^2 - 8p - 24$
2231) $49n^2 - 28n + 4$
2232) $m^2 - 16$
2233) $1 - 16r^2$
2234) $9n^2 - 36$
2235) $x^2 - 49$
2236) $1 - 36b^2$
2237) $36v^2 - 25$
2238) $64x^2 + 48x + 9$
2239) $9x^2 + 48x + 64$
2240) $25a^2 - 16$
2241) $5k^2 + 33k - 14$
2242) $6a^2 - 29a + 35$
2243) $56p^2 - 11p - 15$
2244) $10x^2 + 17x + 6$
2245) $16n^2 - 4$
2246) $16m^2 - 10m - 6$
2247) $3r^2 + 16r + 16$
2248) $28x^2 + 23x - 15$
2249) $35n^2 - 91n + 56$
2250) $48b^2 - 36b - 12$
2251) $36x^2 - 84x + 49$
2252) $9r^2 - 24r + 16$
2253) $49 - 98n + 49n^2$
2254) $4a^2 - 25$
2255) $25v^2 - 1$
2256) $64x^2 - 32x + 4$
2257) $x^2 - 9$
2258) $25n^2 - 49$
2259) $25p^2 + 50p + 25$
2260) $49k^2 - 25$

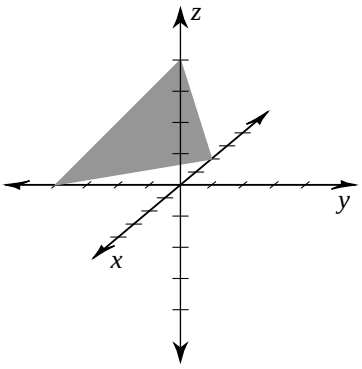
2261)



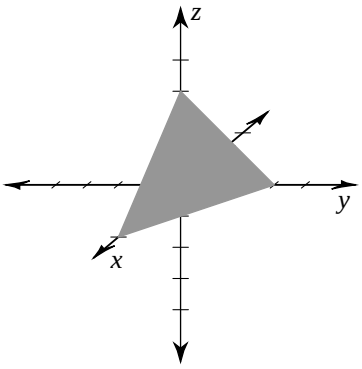
2262)



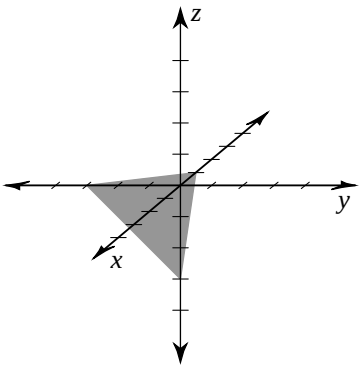
2263)



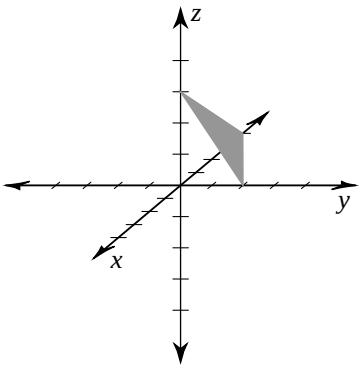
2264)



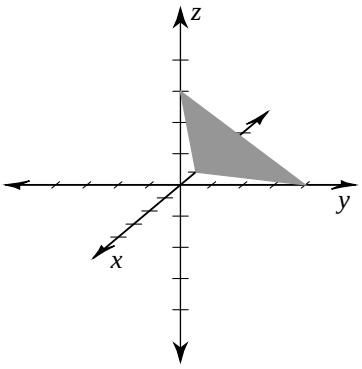
2265)



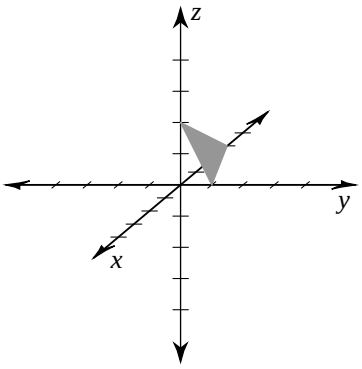
2266)



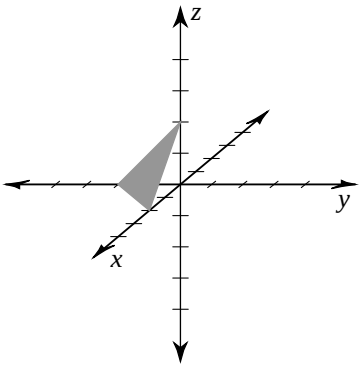
2267)



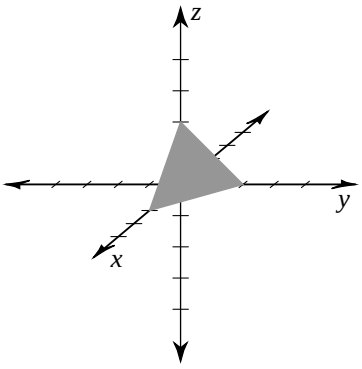
2268)



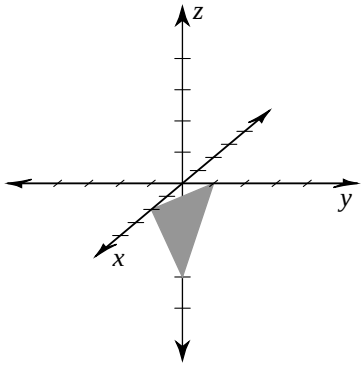
2269)



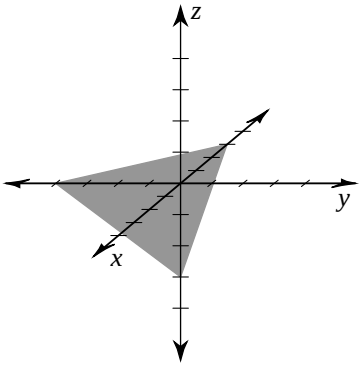
2270)



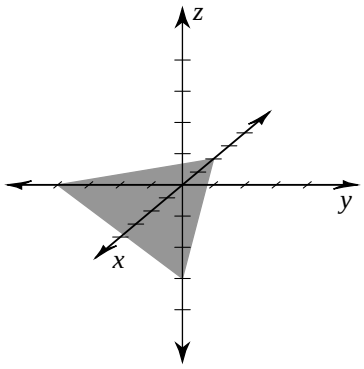
2271)



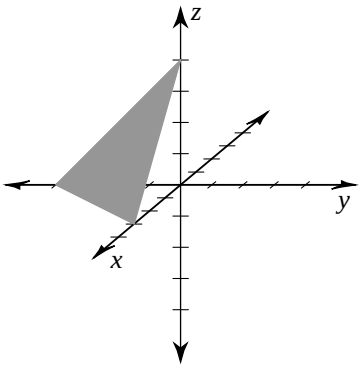
2272)



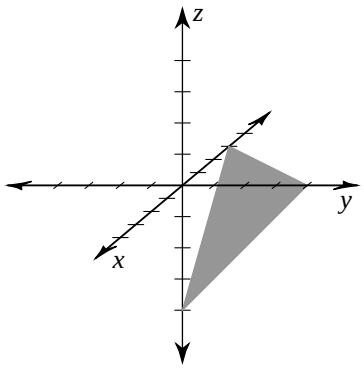
2273)



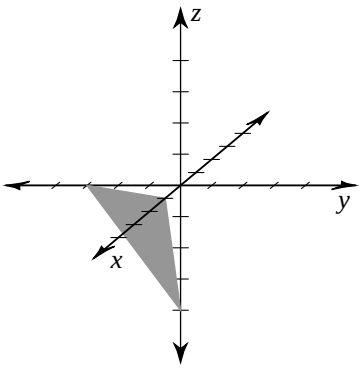
2274)



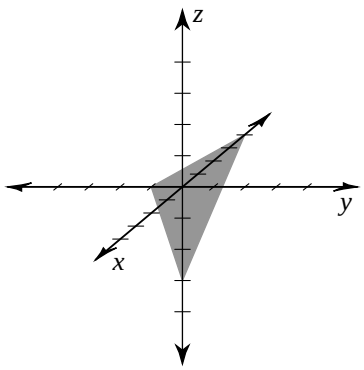
2275)



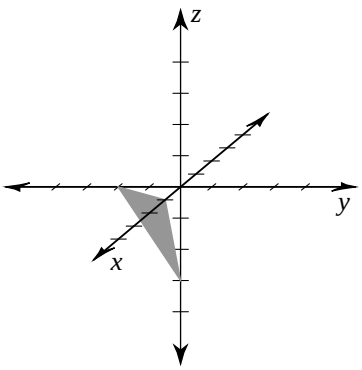
2276)



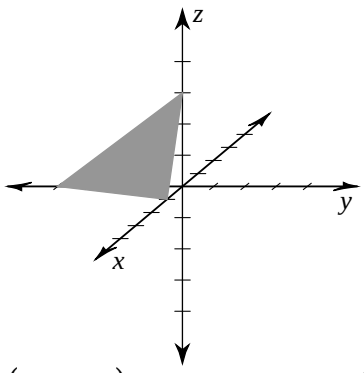
2277)



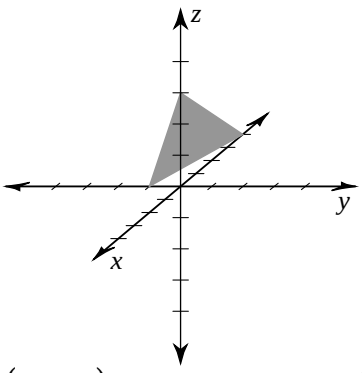
2278)



2279)



2280)



2281) $(-3, 0, 1)$
2282) $(3, -3, 2)$
2283) $(1, 3, 1)$
2284) $(4, -4, 0)$
2285) $(-2, -4, -1)$
2286) $(2, 2, 0)$
2287) $(-4, 4, 0)$
2288) $(1, -1, -2)$
2289) $(-1, 1, 0)$
2290) $(-3, 4, -1)$
2291) $(-1, 2, 4)$
2292) $(2, -4, 3)$

2293) $(4, 4, 2)$ 2294) $(0, 1, 2)$ 2295) $(3, 4, 2)$ 2296) $(-3, -3, 1)$
2297) $(-4, 4, -1)$ 2298) $(4, 3, 1)$ 2299) $(-2, -4, 1)$ 2300) $(1, -1, 0)$
2301) $f(x) = x^4 - 6x^3 + 19x^2 - 54x + 90$ 2302) $f(x) = x^4 - 6x^3 + 22x^2 - 24x + 72$
2303) $f(x) = x^4 - 17x^2 + 70$ 2304) $f(x) = x^4 - 20x^2 + 100$ 2305) $f(x) = x^4 + 18x^2 + 81$
2306) $f(x) = x^4 - 12x^3 + 56x^2 - 120x + 100$ 2307) $f(x) = x^4 - 4x^3 - 11x^2 - 14x - 2$
2308) $f(x) = x^4 + 6x^3 + 18x^2 + 30x + 25$ 2309) $f(x) = x^4 - 9x^2 - 12x + 10$
2310) $f(x) = x^4 - 6x^2 - 7$ 2311) $f(x) = x^3 - 2x^2 - 16x + 32$
2312) $f(x) = x^3 + 6x^2 + 8x$ 2313) $f(x) = x^3 + 12x^2 + 47x + 60$
2314) $f(x) = x^5 - 2x^4 - 18x^3 + 42x^2 + 37x - 140$
2315) $f(x) = x^3 + 3x^2 + 4x + 12$ 2316) $f(x) = x^3 + x^2 - 17x + 15$
2317) $f(x) = x^4 - 6x^3 + 27x^2 - 54x + 162$ 2318) $f(x) = x^4 + 11x^3 + 35x^2 + 13x - 60$
2319) $f(x) = x^4 - 2x^3 - 8x^2 + 6x - 1$ 2320) $f(x) = x^4 + 2x^3 + 4x^2 + 18x - 45$
2321) $f(x) \to +\infty$ as $x \to -\infty$, $f(x) \to +\infty$ as $x \to +\infty$ 2322) $f(x) \to +\infty$ as $x \to -\infty$, $f(x) \to +\infty$ as $x \to +\infty$ 2323) $f(x) \to +\infty$ as $x \to -\infty$, $f(x) \to -\infty$ as $x \to +\infty$
2324) $f(x) \to +\infty$ as $x \to -\infty$, $f(x) \to +\infty$ as $x \to +\infty$ 2325) $f(x) \to +\infty$ as $x \to -\infty$, $f(x) \to -\infty$ as $x \to +\infty$ 2326) $f(x) \to -\infty$ as $x \to -\infty$, $f(x) \to +\infty$ as $x \to +\infty$
2327) $f(x) \to +\infty$ as $x \to -\infty$, $f(x) \to -\infty$ as $x \to +\infty$ 2328) $f(x) \to -\infty$ as $x \to -\infty$, $f(x) \to -\infty$ as $x \to +\infty$ 2329) $f(x) \to -\infty$ as $x \to -\infty$, $f(x) \to +\infty$ as $x \to +\infty$
2330) $f(x) \to -\infty$ as $x \to -\infty$, $f(x) \to -\infty$ as $x \to +\infty$ 2331) -2 2332) -1
2333) 6 2334) 1 2335) 11 2336) 4
2337) -8 2338) 8 2339) 1 2340) 11
2341) -3 2342) -12 2343) -2 2344) 0
2345) 12 2346) 0 2347) -8 2348) -9
2349) 9 2350) 2 2351) -3 2352) -4
2353) -10 2354) 5 2355) 11 2356) -7
2357) -11 2358) -5 2359) -7 2360) 6
2361) $\left\{\frac{i\sqrt{21}}{3}, -\frac{i\sqrt{21}}{3}, \sqrt{3}, -\sqrt{3}\right\}$ 2362) $\left\{\sqrt{7}, -\sqrt{7}, \frac{3\sqrt{5}}{5}, -\frac{3\sqrt{5}}{5}\right\}$
2363) $\left\{\frac{i\sqrt{35}}{5}, -\frac{i\sqrt{35}}{5}, -2, 2\right\}$ 2364) $\left\{-\frac{2}{3}, \frac{3+i\sqrt{3}}{2}, \frac{3-i\sqrt{3}}{2}\right\}$ 2365) $\left\{i\sqrt{7}, -i\sqrt{7}, \frac{\sqrt{6}}{3}, -\frac{\sqrt{6}}{3}\right\}$
2366) $\left\{\sqrt{3}, -\sqrt{3}, \frac{i\sqrt{5}}{5}, -\frac{i\sqrt{5}}{5}\right\}$ 2367) $\left\{0, \frac{i\sqrt{10}}{2}, -\frac{i\sqrt{10}}{2}, 2i\sqrt{2}, -2i\sqrt{2}\right\}$
2368) $\{0, 3, 1 + i\sqrt{10}, 1 - i\sqrt{10}\}$ 2369) $\left\{0 \text{ mult. } 2, -3, \frac{4+2i\sqrt{5}}{3}, \frac{4-2i\sqrt{5}}{3}\right\}$
2370) $\left\{0, i\sqrt{5}, -i\sqrt{5}, \frac{i\sqrt{10}}{2}, -\frac{i\sqrt{10}}{2}\right\}$ 2371) $\left\{-\frac{3}{5}, \frac{\sqrt{21}}{3}, -\frac{\sqrt{21}}{3}, \sqrt{6}, -\sqrt{6}\right\}$
2372) $\left\{-\frac{1}{5}, 2\sqrt{2}, -2\sqrt{2}, \frac{i\sqrt{10}}{2}, -\frac{i\sqrt{10}}{2}\right\}$ 2373) $\left\{\frac{1}{3}, i\sqrt{2}, -i\sqrt{2}, \frac{2i\sqrt{10}}{5}, -\frac{2i\sqrt{10}}{5}\right\}$
2374) $\left\{\frac{2i\sqrt{3}}{3}, -\frac{2i\sqrt{3}}{3}, 2\sqrt{2}, -2\sqrt{2}\right\}$ 2375) $\left\{\frac{3i\sqrt{2}}{2}, -\frac{3i\sqrt{2}}{2}, 2i, -2i\right\}$
2376) $\left\{i\sqrt{6}, -i\sqrt{6}, \frac{i\sqrt{15}}{3}, -\frac{i\sqrt{15}}{3}\right\}$ 2377) $\left\{0, -\frac{1}{5}, -1\right\}$ 2378) $\left\{0, \frac{3}{2}, -2\right\}$
2379) $\left\{0, -1, 1, \frac{2\sqrt{3}}{3}, -\frac{2\sqrt{3}}{3}\right\}$ 2380) $\left\{0, \sqrt{7}, -\sqrt{7}, \frac{\sqrt{35}}{5}, -\frac{\sqrt{35}}{5}\right\}$
2381) quintic trinomial 2382) quadratic binomial 2383) quadratic monomial
2384) quintic polynomial with four terms 2385) linear binomial 2386) quintic monomial
2387) linear monomial 2388) quartic binomial 2389) constant monomial
2390) quartic binomial

2391) Possible rational zeros: $\pm 1, \pm 5, \pm \frac{1}{5}$

Rational zeros: $\left\{-1, -\frac{1}{5}, 5\right\}$

2392) Possible rational zeros:
$\pm 1, \pm 2, \pm 3, \pm 6, \pm 9, \pm 18$
Rational zeros: $\{-3\}$

2393) Possible rational zeros: $\pm 1, \pm 3, \pm 11, \pm 33$
Rational zeros: $\{3\}$

2394) Possible rational zeros: $\pm 1, \pm 2, \pm \frac{1}{2}$

Rational zeros: $\left\{-2, \frac{1}{2}, -1\right\}$

2395) Possible rational zeros:
$\pm 1, \pm 2, \pm 5, \pm 10, \pm 25, \pm 50, \pm \frac{1}{2}, \pm \frac{5}{2}, \pm \frac{25}{2}$

Rational zeros: $\left\{-\frac{5}{2}\right\}$

2396) Possible rational zeros: $\pm 1, \pm \frac{1}{2}, \pm \frac{1}{4}$

Rational zeros: $\left\{-\frac{1}{4}, -1, 1\right\}$

2397) Possible rational zeros:
$\pm 1, \pm 2, \pm 4, \pm 5, \pm 10, \pm 20$
Rational zeros: $\{-2\}$

2398) Possible rational zeros: $\pm 1, \pm 3, \pm \frac{1}{3}$

Rational zeros: $\left\{-3, -\frac{1}{3}, 1\right\}$

2399) Possible rational zeros:
$\pm 1, \pm 2, \pm 3, \pm 6, \pm 9, \pm 18, \pm \frac{1}{2}, \pm \frac{3}{2}, \pm \frac{9}{2}$
Rational zeros: $\{-2\}$

2400) Possible rational zeros:
$\pm 1, \pm 2, \pm 3, \pm 6, \pm 9, \pm 18, \pm \frac{1}{2}, \pm \frac{3}{2}, \pm \frac{9}{2}$
Rational zeros: $\{-2\}$

2401) Possible rational zeros: $\pm 1, \pm 2, \pm \frac{1}{2}$

Rational zeros: $\left\{-2, -1, \frac{1}{2}\right\}$

2402) Possible rational zeros: $\pm 1, \pm 5, \pm \frac{1}{3}, \pm \frac{5}{3}$

Rational zeros: $\left\{\frac{5}{3}\right\}$

2403) Possible rational zeros: $\pm 1, \pm 3, \pm \frac{1}{3}$

Rational zeros: $\left\{3, 1, \frac{1}{3}\right\}$

2404) Possible rational zeros:
$\pm 1, \pm 3, \pm 11, \pm 33, \pm \frac{1}{2}, \pm \frac{3}{2}, \pm \frac{11}{2}, \pm \frac{33}{2}$
Rational zeros: $\{-3\}$

2405) Possible rational zeros: $\pm 1, \pm 2, \pm 4, \pm \frac{1}{2}$

Rational zeros: $\left\{-\frac{1}{2}\right\}$

2406) Possible rational zeros: $\pm 1, \pm 3$
Rational zeros: $\{-3, -1 \text{ mult. } 2\}$

2407) Possible rational zeros: $\pm 1, \pm \frac{1}{3}$

Rational zeros: $\left\{-\frac{1}{3}, 1 \text{ mult. } 2\right\}$

2408) Possible rational zeros: $\pm 1, \pm \frac{1}{2}, \pm \frac{1}{4}$

Rational zeros: $\left\{-1, \frac{1}{2}, -\frac{1}{2}\right\}$

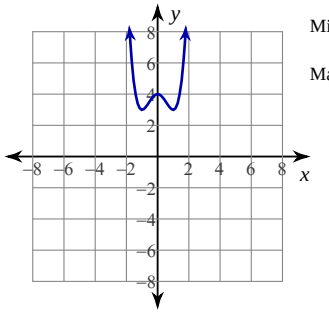
2409) Possible rational zeros: $\pm 1, \pm \frac{1}{2}, \pm \frac{1}{3}, \pm \frac{1}{6}$

Rational zeros: $\left\{\frac{1}{2}\right\}$

2410) Possible rational zeros: $\pm 1, \pm \frac{1}{2}$

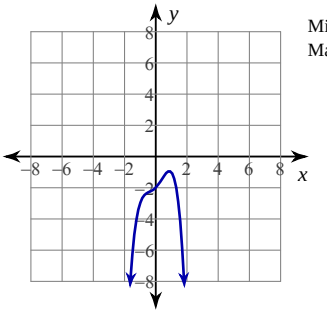
Rational zeros: $\left\{\frac{1}{2}\right\}$

2411)



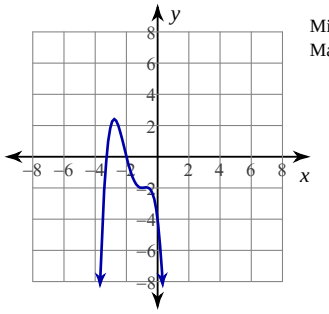
Minima: $(-1, 3)$
$(1, 3)$
Maxima: $(0, 4)$

2412)



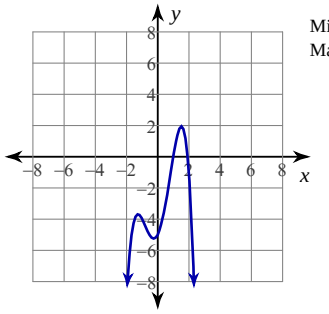
Minima: None
Maxima: $(0.9, -0.9)$

2413)



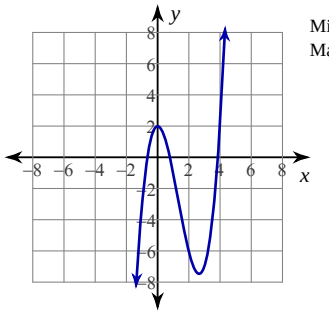
Minima: $(-1, -2)$
Maxima: $(-2.8, 2.4)$
$(-0.7, -2)$

2414)



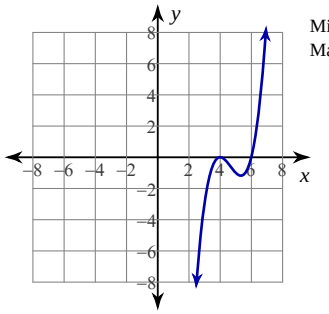
Minima: $(-0.3, -5.3)$
Maxima: $(-1.3, -3.7)$
$(1.5, 1.9)$

2415)



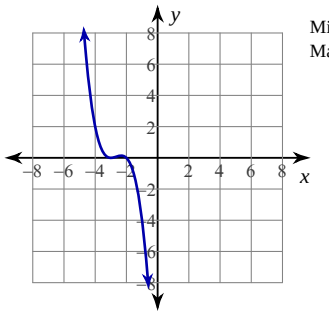
Minima: $(2.7, -7.5)$
Maxima: $(0, 2)$

2416)



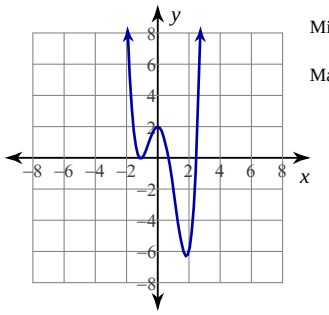
Minima: $(5.3, -1.2)$
Maxima: $(4, 0)$

2417)



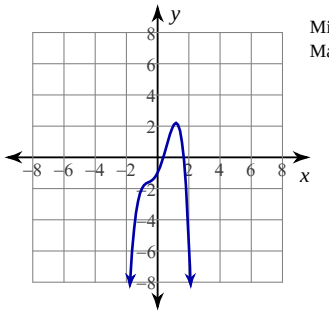
Minima: $(-3, 0)$
Maxima: $(-2.3, 0.1)$

2418)



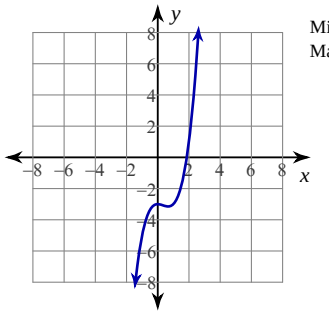
Minima: $(-1.1, 0)$
$(1.8, -6.3)$
Maxima: $(0, 2)$

2419)



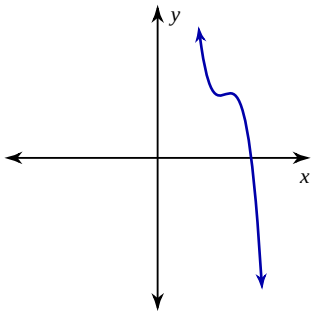
Minima: None
Maxima: $(1.2, 2.2)$

2420)

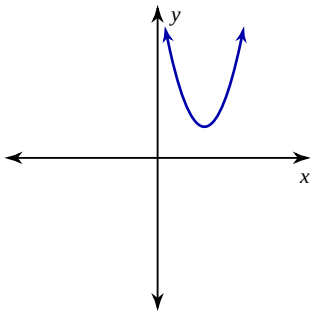


Minima: $(0.7, -3.1)$
Maxima: $(0, -3)$

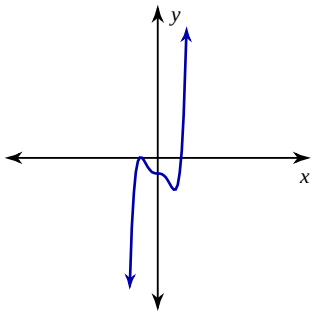
2421)



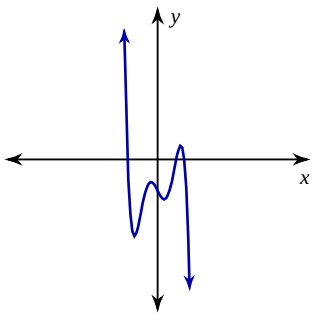
2422)



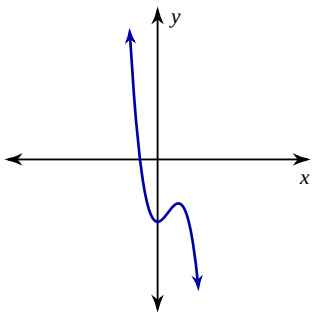
2423)



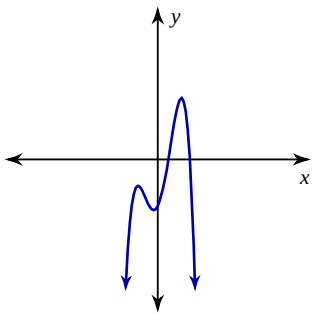
2424)

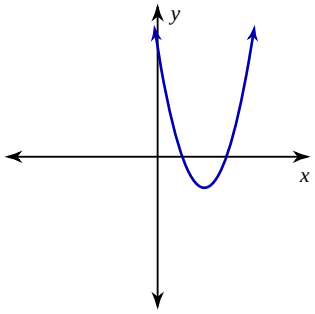


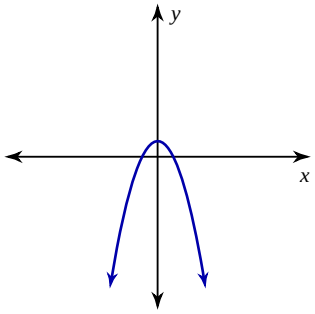
2425)

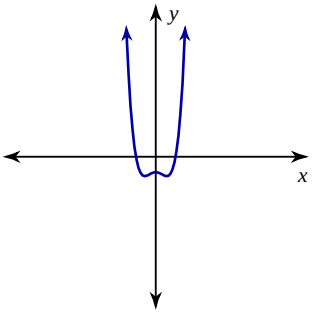


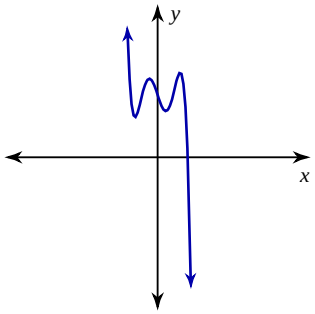
2426)



2427) 

2428) 

2429) 

2430) 

2431) $(10n)^{\frac{1}{6}}$

2432) $(6x)^{\frac{2}{3}}$

2433) $(2b)^{\frac{6}{5}}$

2434) $(5x)^{\frac{5}{2}}$

2435) $v^{\frac{5}{2}}$

2436) $(7a)^{\frac{1}{2}}$

2437) $(2k)^{\frac{3}{2}}$

2438) $(7x)^{\frac{5}{2}}$

2439) $(6n)^{\frac{4}{3}}$

2440) $(5b)^{\frac{5}{4}}$

2441) $\left(\sqrt[5]{a}\right)^2$

2442) $\left(\sqrt{5n}\right)^3$

2443) $\sqrt[3]{4x^2}$

2444) $\left(\sqrt[3]{5k}\right)^4$

2445) $\left(\sqrt[4]{x}\right)^7$

2446) $\sqrt{3n}$

2447) $\left(\sqrt[5]{3m}\right)^7$

2448) $\sqrt[5]{3p}$

2449) $\sqrt[3]{n}$

2450) $\left(\sqrt[4]{3x}\right)^3$

2451) $4yx^4$

2452) $4b^4a^{\frac{5}{2}}$

2453) $\dfrac{6y^{\frac{1}{6}}x^{\frac{29}{12}}}{y}$

2454) $\dfrac{3n}{m^6}$

2455) $\dfrac{6y^{\frac{1}{2}}x^{\frac{2}{3}}}{y^2x}$

2456) $\dfrac{32x^{\frac{1}{2}}}{yx}$

2457) $\dfrac{3m^{\frac{25}{12}}}{n}$

2458) $xy^{\frac{3}{4}} \cdot 3$

2459) $\dfrac{8x^{\frac{5}{6}}}{y^3}$

2460) $\dfrac{16y^{\frac{5}{6}}x^{\frac{7}{3}}}{y^4}$

2461) 3 ; $\{-8\}$

2462) $-\dfrac{1}{5}$; $\{6\}$

2463) $\dfrac{1}{k-1}$; $\{0, 1\}$

2464) $\dfrac{1}{x-2}$; $\{1, 2\}$

2465) $x+2$; $\{7\}$

2466) $(n+6)\cdot -1$; $\{1\}$

2467) $\dfrac{5(m+1)}{8}$; No excluded values.

2468) $\dfrac{3p+5}{2p^2}$; $\{0\}$

2469) 2 ; $\{9\}$

2470) $\dfrac{2}{7n-9}$; $\left\{0, \dfrac{9}{7}\right\}$

2471) $\dfrac{9a}{3a+10}$; $\left\{0, -\dfrac{10}{3}\right\}$

2472) $-\dfrac{1}{10}$; $\{3\}$

2473) $\dfrac{1}{4k}$; $\{0, 4\}$

2474) $\dfrac{2(x+4)}{9}$; No excluded values.

2475) $\dfrac{8}{5x+8}$; $\left\{-\dfrac{8}{5}\right\}$

2476) $\dfrac{1}{n-9}$; $\{-2, 9\}$

2477) $\dfrac{7m-9}{2}$; No excluded values.

2478) 10 ; $\{-1\}$

2479) $\dfrac{8x}{2x-3}$; $\left\{0, \dfrac{3}{2}\right\}$

2480) $\dfrac{1}{4}$; $\{-1\}$

2481) $12,\ 19,\ 27$

2482) $121,\ 169,\ 225$

2483) $144,\ 196,\ 256$

2484) $1,\ \dfrac{3}{2},\ \dfrac{7}{4}$

2485) $\dfrac{13}{64},\ \dfrac{15}{128},\ \dfrac{17}{256}$

2486) $15624,\ 78124,\ 390624$

2487) $-1440,\ -10080,\ -80640$

2488) $\dfrac{3}{2},\ \dfrac{4}{3},\ \dfrac{6}{5}$

2489) $\dfrac{15}{7},\ \dfrac{15}{8},\ \dfrac{5}{3}$

2490) $\dfrac{11}{4},\ \dfrac{19}{8},\ \dfrac{35}{16}$

2491) 21

2492) 133

2493) 249
2494) 135
2495) 29
2496) 15
2497) 2485
2498) 28
2499) 70
2500) 2660
2501) $(3, -3, -2)$
2502) $(-3, 2, -4)$
2503) $(-1, -6, 1)$
2504) $(6, -5, -6)$
2505) $(0, 0, 5)$
2506) $(-3, -2, 3)$
2507) $(-1, -2, 0)$
2508) $(-4, -4, 3)$
2509) $(-1, 4, 3)$
2510) Infinitely many solutions
2511) $(1, 2)$
2512) $(1, 3)$
2513) No solution
2514) Infinite number of solutions
2515) No solution
2516) No solution
2517) No solution
2518) $(-4, -5)$
2519) $(3, 1)$
2520) $(-1, 4)$
2521) $(3, 8)$
2522) Infinite number of solutions
2523) $(-3, -5)$
2524) $(-2, 8)$
2525) $(2, 1)$
2526) $(1, 2)$
2527) $(3, -2)$
2528) $(-2, 5)$
2529) $(1, -4)$
2530) No solution
2531) $\frac{\sqrt{2}-\sqrt{6}}{4}$
2532) $\frac{\sqrt{6}-\sqrt{2}}{4}$
2533) $\frac{\sqrt{6}-\sqrt{2}}{4}$
2534) $\frac{\sqrt{6}+\sqrt{2}}{4}$
2535) $\frac{\sqrt{6}+\sqrt{2}}{4}$
2536) $\frac{\sqrt{6}-\sqrt{2}}{4}$
2537) $\frac{\sqrt{2}-\sqrt{6}}{4}$
2538) $\frac{\sqrt{6}+\sqrt{2}}{4}$
2539) $\frac{-\sqrt{6}-\sqrt{2}}{4}$
2540) $\frac{\sqrt{6}-\sqrt{2}}{4}$
2541) $\frac{\sqrt{10}}{10}$
2542) 0
2543) $\frac{\sqrt{50-5\sqrt{10}}}{10}$
2544) $-\frac{336}{527}$
2545) $-\frac{120}{119}$
2546) $\frac{\sqrt{50+5\sqrt{55}}}{10}$
2547) $\frac{233}{361}$
2548) $\frac{24}{7}$
2549) $\frac{\sqrt{17}}{17}$
2550) $-\sqrt{3}+\sqrt{2}$
2551) 1
2552) $-\sqrt{3}$
2553) $\sqrt{3}$
2554) $-\frac{\sqrt{3}}{2}$
2555) $-\sqrt{2}$
2556) $-\frac{\sqrt{2}}{2}$
2557) $-\frac{2\sqrt{3}}{3}$
2558) 0
2559) $\frac{2\sqrt{3}}{3}$
2560) $\sqrt{2}$
2561) 60°
2562) 70.5°
2563) 71.6°
2564) 18.4°
2565) 57.4°
2566) 62.2°
2567) 26.2°
2568) 45°
2569) 38°
2570) 74.1°
2571) $\frac{7}{24}$
2572) $\frac{5}{13}$
2573) $\frac{17}{8}$
2574) $\frac{3}{5}$
2575) $\frac{5}{4}$
2576) $\frac{3}{5}$
2577) $\frac{5\sqrt{17}}{16}$
2578) $\frac{25}{24}$
2579) $\frac{3\sqrt{5}}{2}$
2580) $\frac{8\sqrt{17}}{85}$
2581) 18°
2582) 29°
2583) 71°
2584) 14°
2585) 22°
2586) 32°
2587) 50°
2588) 43°
2589) 37°
2590) 28°
2591) 5.33 hours
2592) 4.74 hours
2593) 7.24 hours
2594) 6.35 minutes
2595) 7.47 hours
2596) 4.44 minutes
2597) 6.74 minutes
2598) 5.14 hours
2599) 6 minutes
2600) 5.24 hours
2601) Real Zeros: –0.7, 0.8, 3.9
2602) Real Zeros: 1.5, 4.9, 2.7
2603) Real Zeros: –1.6, 1.2
2604) Real Zeros: None
2605) Real Zeros: –4.6, –2.4, –3
2606) Real Zeros: None
2607) Real Zeros: –1, 2.1
2608) Real Zeros: 0, 1.8
2609) Real Zeros: 3.3
2610) Real Zeros: None