

Summer assignemnt

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1) This summer assignment includes the most important topics that you should know to make sure that you won't have problems learning the new material taught in Precalculus.

Use extra-paper if need to answer the different exercises showing all your work.

You can use the TI-89 to check your answers, at the end of the worksheet you can find the solutions to the problems as well.

During the first week you will be tested on the topics included in this summer packet.

Solve each equation.

$$2) \quad |-7 + 2b| = 7$$

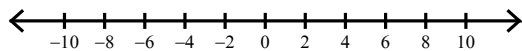
$$3) \quad |10n + 3| = -67$$

$$4) \quad 4|10v + 2| = 72$$

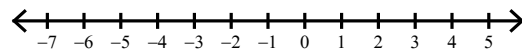
$$5) \quad \frac{|7 + 2x|}{10} = 3$$

Solve each inequality and graph its solution.

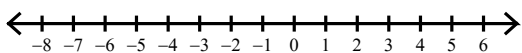
$$6) \quad |10a + 7| < 93$$



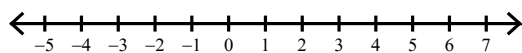
$$7) \quad |4n + 2| < -14$$



$$8) \quad |-5 + k| + 10 > 3$$

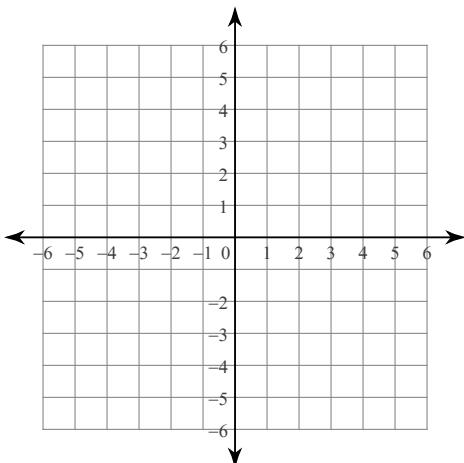


$$9) \quad -5|-2x + 1| < -15$$

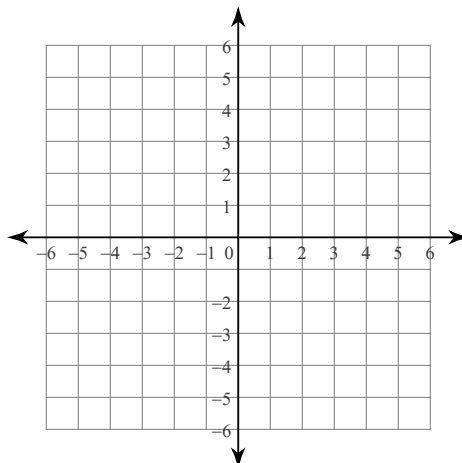


Graph each equation.

$$10) \quad y = |x| + 2$$



$$11) \quad y = |x| - 2$$



Simplify each expression.

12) $-2(5m + 2) - 3(1 - 7m)$

13) $5(1 - 5p) - 2p(1 + 6p)$

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

14) $a^2 + 17a + \underline{\hspace{1cm}}$

15) $x^2 - 13x + \underline{\hspace{1cm}}$

Solve each equation by completing the square.

16) $4b^2 + 8b - 84 = -7$

17) $4r^2 + 8r - 66 = -9$

Simplify.

18) $(1 - 4i)^2 + 3 + (8i) - (-2 - 7i)$

19) $(-3 + 7i)(-3 - 5i)(-1 - 4i)$

20) $\frac{10}{10 + \sqrt{7}}$

21) $\frac{6}{4 + \sqrt{2}}$

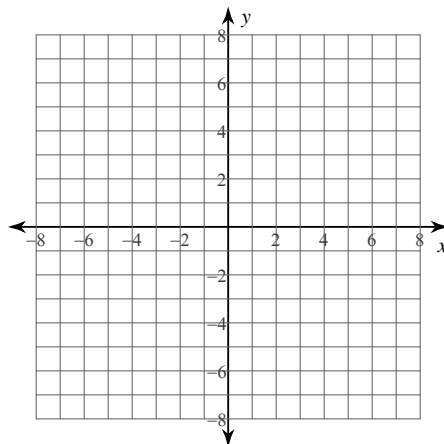
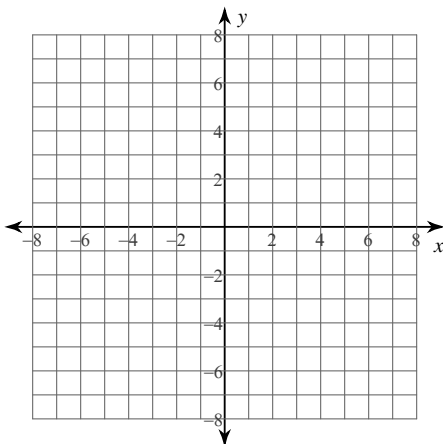
22) $\frac{-3 - 8i}{-10 - 7i}$

23) $\frac{-10 + 10i}{-7 + 3i}$

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

24) $y = -x^2 - 4x - 1$

25) $y = 2x^2 - 16x + 28$



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

26) Vertex: $(-4, -6)$, Focus: $\left(-4, -\frac{49}{8}\right)$

27) Vertex: $(-2, 1)$, Focus: $\left(-2, \frac{3}{2}\right)$

Long division

28) $(7n^3 + 32n^2 - 64n - 24) \div (n + 6)$

29) $(m^3 + m^2 - 73m + 15) \div (m - 8)$

30) $(7r^3 + 74r^2 + 110r + 43) \div (7r + 4)$

31) $(6x^3 - 57x^2 - 6x + 9) \div (6x + 3)$

Synthetic division

32) $(b^3 + 17b^2 + 63b - 48) \div (b + 7)$

33) $(2n^3 - 2n^2 - 61n + 13) \div (n - 6)$

Solve each equation by factoring.

34) $x^2 = -6x + 7$

35) $v^2 + 4v = 0$

36) $n^2 = -24 - 10n$

37) $a^2 + 40 = -13a$

Solve each equation. Remember to check for extraneous solutions.

38) $\frac{2x}{x^2 + 2x - 15} - \frac{1}{x^2 + 2x - 15} = \frac{7}{x - 3}$

39) $\frac{5}{8k} = \frac{1}{8k} - 1$

40) $\frac{1}{n^2 - 4n - 5} = \frac{1}{n + 1}$

41) $\frac{2x + 10}{x^2 + x} = \frac{5}{x}$

Simplify. Your answer should contain only positive exponents.

42) $2a^2b^2 \cdot 2a^2$

43) $x^{-3}y^3 \cdot xy^4$

44) $-m^0 \cdot (-n^0)^{-2}$

45) $y^{-5}(x^4y^5)^3$

Factor each completely.

46) $5a^3 + 30a^2 - 8a - 48$

47) $v^3 + v^2 + 2v + 2$

48) $x^3 + 11x^2 + 28x$

49) $3m^4 - 6m^3 - 72m^2$

50) $p^2 - 10p + 21$

51) $k^3 - 15k^2 + 50k$

52) $150x^2 - 216$

53) $243p^2 - 192$

54) $1 + 14m + 49m^2$

55) $648n^2 - 144n + 8$

56) $54a^3 + 2$

57) $125x^3 + 216$

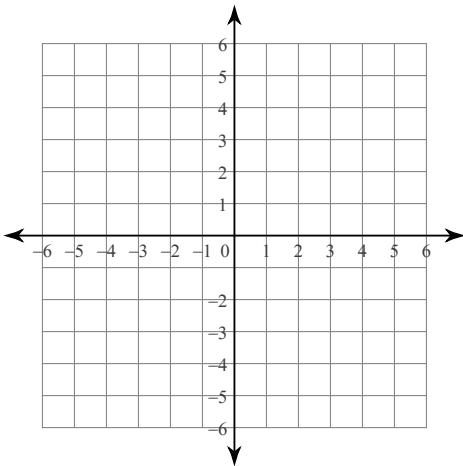
Evaluate each function.

58) $p(a) = -2|a|$; Find $p(10)$

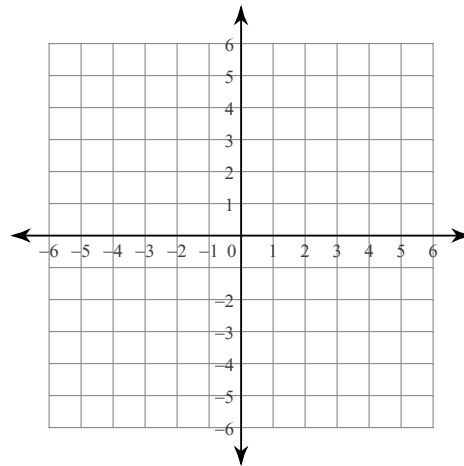
59) $p(t) = -2 \cdot 4^t + 2$; Find $p(1)$

Sketch the graph of each line.

60) $x - 3 = 0$

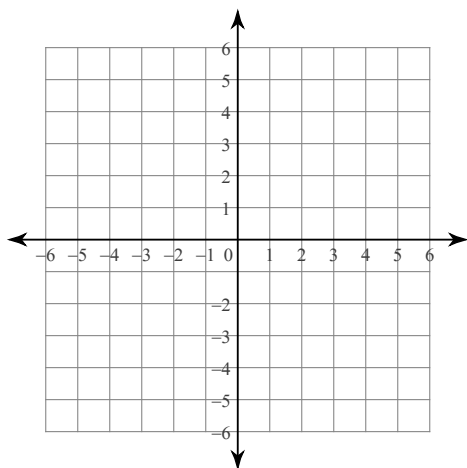


61) $x = 5$

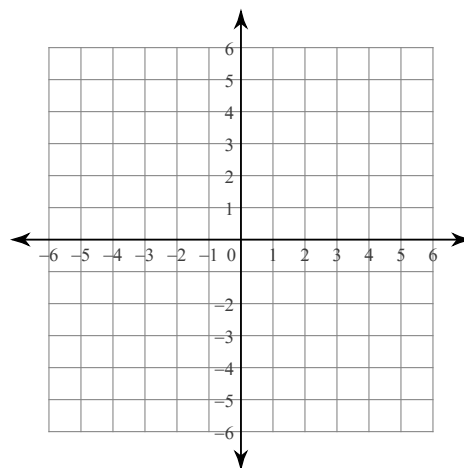


Sketch the graph of each linear inequality.

62) $5x + y < 0$

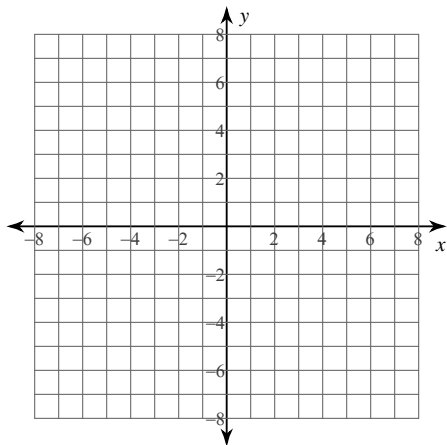


63) $x + y \geq 1$

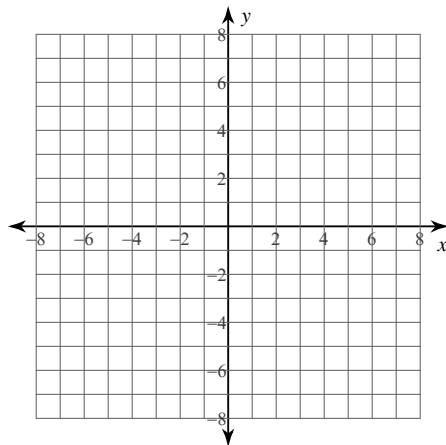


Identify the vertex and axis of symmetry of each. Then sketch the graph.

64) $y = -2x^2 - 4x - 5$

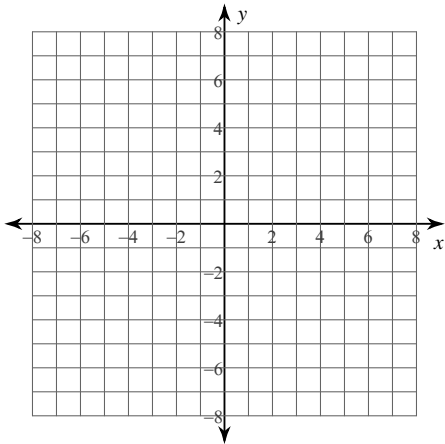


65) $y = 2x^2 + 12x + 13$

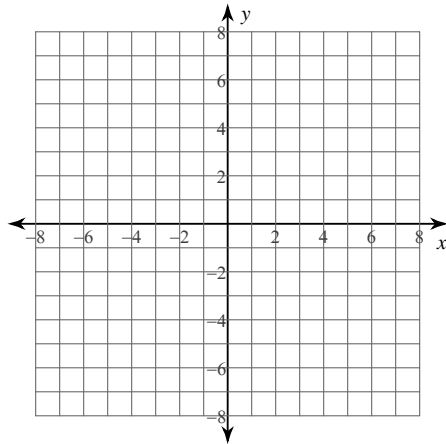


Graph each function.

$$66) f(x) = \frac{1}{x+2} + 3$$

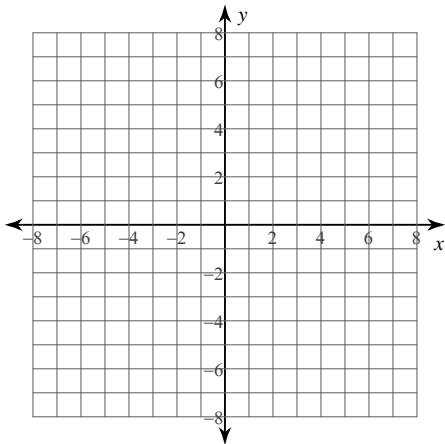


$$67) f(x) = \frac{2}{x-3} + 2$$

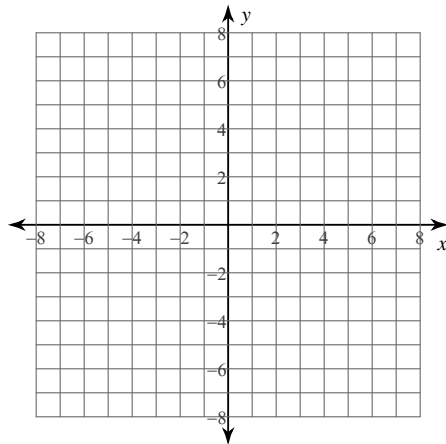


Identify the vertical asymptotes, x-intercepts, horizontal asymptote, and domain of each. Then sketch the graph.

$$68) f(x) = \frac{x-4}{-4x+4}$$

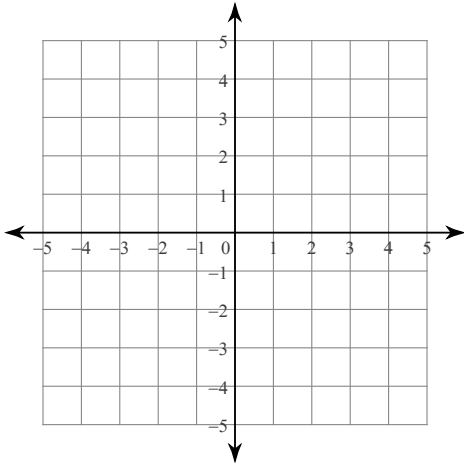


$$69) f(x) = \frac{x^2 + 2x}{x^2 + 4x}$$

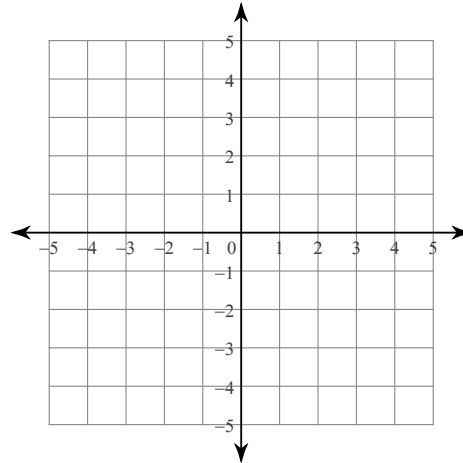


Sketch the solution to each system of inequalities.

70) $x + y \geq -3$
 $2x - y \leq -3$



71) $x - 2y > -2$
 $5x - 2y \geq 6$



Evaluate each determinant.

72) $\begin{vmatrix} 4 & -5 \\ 1 & 4 \end{vmatrix}$

73) $\begin{vmatrix} -3 & -4 \\ 2 & 0 \end{vmatrix}$

74) $\begin{vmatrix} 2 & 2 & -7 \\ -6 & 4 & -6 \\ 7 & -4 & -6 \end{vmatrix}$

75) $\begin{vmatrix} -1 & -6 & 2 \\ -1 & -6 & -3 \\ 0 & -2 & 5 \end{vmatrix}$

Evaluate each expression.

76) $(-6) - \left(\frac{(-16) - (-4)}{-6} - ((-1) + 1 + 3) \right)$

77) $\left(\left(\frac{-15}{-3} \right) (6) - 3 \right) \left(\frac{4}{(-5) + 1} \right)$

78) $\frac{((15 - 6 + (-4) - 2)(3))(2)}{-3}$

79) $\frac{(-6) - (1 - 4)}{(-4) + 2 + 6 - 5}$

Simplify.

80) $3\sqrt[3]{54} - 2\sqrt[3]{6} - 2\sqrt[3]{2}$

81) $3\sqrt[7]{-768} + 3\sqrt[7]{384} + 3\sqrt[7]{3}$

Simplify each expression.

$$82) \frac{6}{2p^2 - 2p} + \frac{5}{2}$$

$$83) \frac{6x}{3x^2 + 9x} + \frac{5}{3}$$

$$84) \frac{3n}{2n^3 - 4n^2} - \frac{4}{n + 4}$$

$$85) 4m - \frac{2m}{2m^2 - 4m + 2}$$

$$86) \frac{2r^2}{r^2 + 3r - 28} \div \frac{1}{r - 4}$$

$$87) \frac{x^2 - x - 56}{4} \div \frac{16 + 6x - x^2}{4}$$

$$88) \frac{3n + 6}{6n + 9} \cdot \frac{8n + 12}{3}$$

$$89) \frac{21b + 21}{7b + 35} \cdot \frac{b^2 - 3b - 40}{18b + 18}$$

Simplify each and state the excluded values.

$$90) \frac{20v - 20}{12v + 12}$$

$$91) \frac{x^2 - 4x - 12}{x^2 + 10x + 16}$$

Evaluate each function at the given value.

$$92) f(n) = -3n^4 + 13n^3 - 6n^2 - 21n + 6 \text{ at } n = 3$$

Solve each system by elimination.

$$\begin{aligned} 93) \quad & 2x - 4y + 4z = 16 \\ & x - 2y + 2z = 8 \\ & -3x + 2y + z = -22 \end{aligned}$$

$$\begin{aligned} 94) \quad & -3x + 2y + 3z = -30 \\ & -3x + 3y - 5z = -17 \\ & 3x - 4y + 2z = 26 \end{aligned}$$

Answers to Summer assignemnt


1) The dot next to the choice indicates that it is the answer.

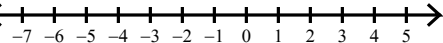
2) $\{7, 0\}$

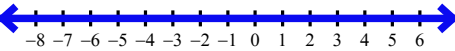
3) No solution.

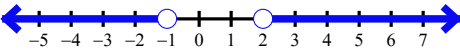
4) $\left\{\frac{8}{5}, -2\right\}$

5) $\left\{\frac{23}{2}, -\frac{37}{2}\right\}$

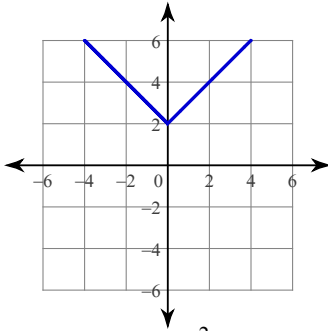
6) $-10 < a < \frac{43}{5}$: 

7) No solution. : 

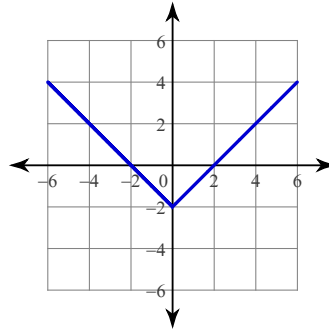
8) { All real numbers. } : 

9) $x < -1$ or $x > 2$: 

10)



11)



12) $11m - 7$

13) $5 - 27p - 12p^2$

14) $\frac{289}{4}; \left(a + \frac{17}{2}\right)^2$

15) $\frac{169}{4}; \left(x - \frac{13}{2}\right)^2$

16) $\left\{\frac{7}{2}, -\frac{11}{2}\right\}$

17) $\left\{\frac{-2 + \sqrt{61}}{2}, \frac{-2 - \sqrt{61}}{2}\right\}$

18) $-10 + 7i$

19) $-68 - 170i$

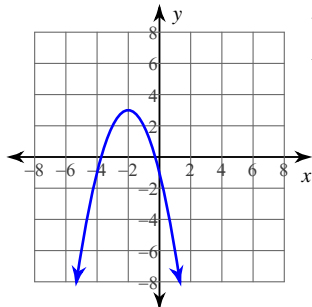
20) $\frac{100 - 10\sqrt{7}}{93}$

21) $\frac{12 - 3\sqrt{2}}{7}$

22) $\frac{86 + 59i}{149}$

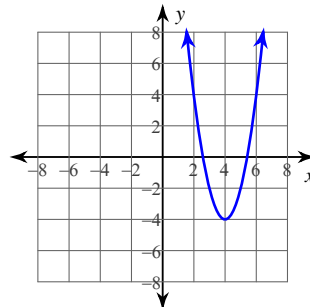
23) $\frac{50 - 20i}{29}$

24)



Vertex: $(-2, 3)$
Axis of Sym.: $x = -2$

25)



Vertex: $(4, -4)$
Axis of Sym.: $x = 4$

26) $y = -2x^2 - 16x - 38$

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

28) $7n^2 - 10n - 4$

29) $m^2 + 9m - 1 + \frac{7}{m-8}$

30) $r^2 + 10r + 10 + \frac{3}{7r+4}$

31) $x^2 - 10x + 4 - \frac{1}{2x+1}$

32) $b^2 + 10b - 7 + \frac{1}{b+7}$

33) $2n^2 + 10n - 1 + \frac{7}{n-6}$

34) $\{1, -7\}$

35) $\{-4, 0\}$

36) $\{-4, -6\}$

37) $\{-8, -5\}$

38) $\left\{-\frac{36}{5}\right\}$

39) $\left\{-\frac{1}{2}\right\}$

40)

41)

42) $4a^4b^2$

43) $\frac{y^7}{x^2}$

44) -1

45) $x^{12}y^{10}$

46) $(5a^2 - 8)(a + 6)$

47) $(v^2 + 2)(v + 1)$

48) $x(x + 7)(x + 4)$

49) $3m^2(m + 4)(m - 6)$

50) $(p - 7)(p - 3)$

51) $k(k - 10)(k - 5)$

52) $6(5x + 6)(5x - 6)$

53) $3(9p + 8)(9p - 8)$

54) $(1 + 7m)^2$

55) $8(9n - 1)^2$

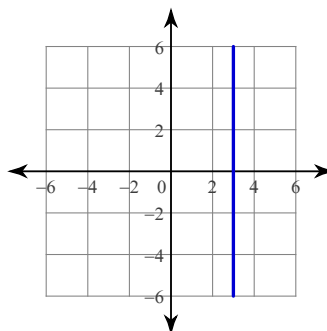
56) $2(3a + 1)(9a^2 - 3a + 1)$

57) $(5x + 6)(25x^2 - 30x + 36)$

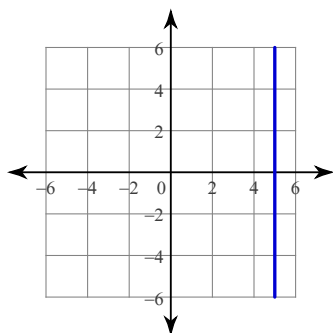
58) -20

59) -6

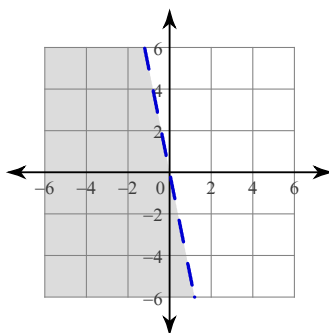
60)



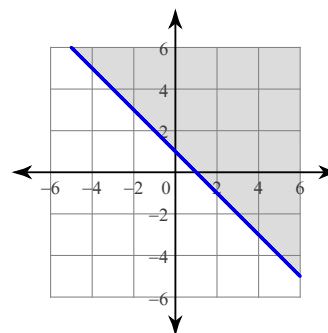
61)



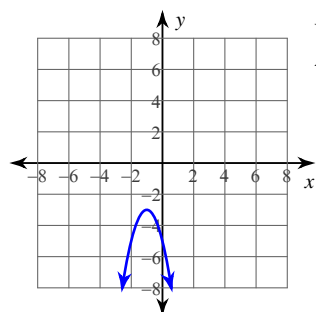
62)



63)

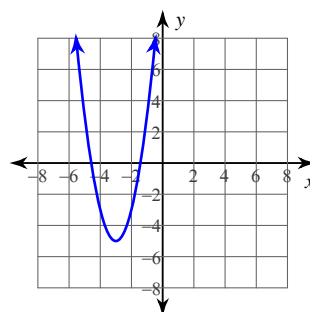


64)



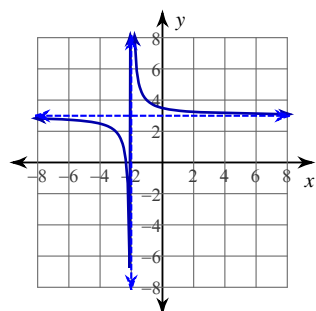
Vertex: $(-1, -3)$
Axis of Sym.: $x = -1$

65)

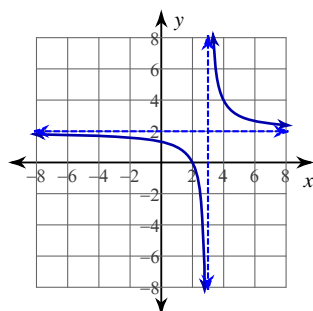


Vertex: $(-3, -5)$
Axis of Sym.: $x = -3$

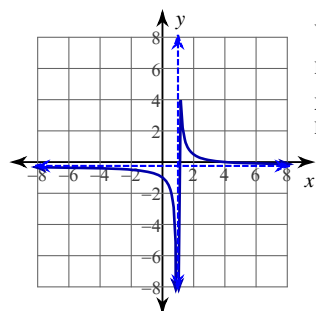
66)



67)

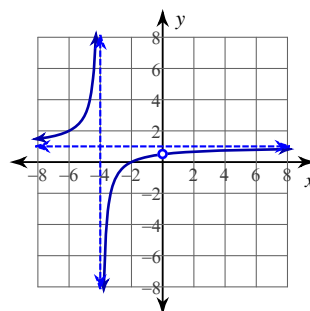


68)



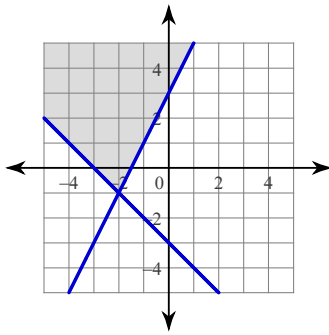
Vertical Asym.: $x = 1$
Horz. Asym.: $y = -\frac{1}{4}$
X-intercepts: 4
Domain:
All reals except 1

69)

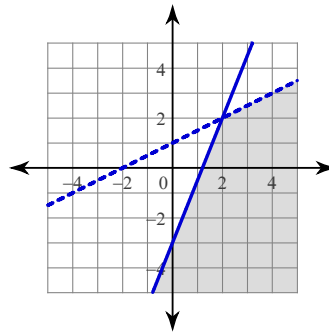


Vertical Asym.: $x = -4$
Horz. Asym.: $y = 1$
X-intercepts: -2
Domain:
All reals except $-4, 0$

70)



71)



72) 21

73) 8

77) -27

81) $-6\sqrt[7]{6} + 9\sqrt[7]{3}$

85) $\frac{4m^3 - 8m^2 + 3m}{(m-1)^2}$

89) $\frac{b-8}{6}$

93) Infinitely many solutions

74) -224

78) -6

82) $\frac{6 + 5p^2 - 5p}{2p(p-1)}$

86) $\frac{2r^2}{r+7}$

90) $\frac{5(v-1)}{3(v+1)}; \{-1\}$

94) (6, -3, -2)

75) 10

79) 3

83) $\frac{21 + 5x}{3(x+3)}$

87) $-\frac{(x+7)}{2+x}$

91) $\frac{x-6}{x+8}; \{-2, -8\}$

76) -5

80) $7\sqrt[3]{2} - 2\sqrt[3]{6}$

84) $\frac{19n + 12 - 8n^2}{2n(n+4)(n-2)}$

88) $\frac{4(n+2)}{3}$

92) -3