

## Algebra 2

**Evaluate each expression without a calculator.**

1)  $\left(3\frac{1}{3}\right)\left(-2\frac{1}{3}\right) - -3\frac{3}{5}$

2)  $\frac{-1}{4} - 2 \div -3\frac{1}{3}$

3)  $(-1.4) \times 4.4 + 2.7$

4)  $4.2 \times 2.3 \times (-1.4)$

**Write in simplest radical form.**

5)  $\sqrt{28}$

6)  $\sqrt{20}$

7)  $\sqrt{72}$

8)  $\sqrt{48}$

**Solve each equation.**

9)  $3(b - 3) = 3b - 9$

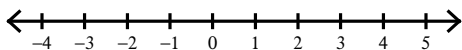
10)  $-6(7m + 2) + 3 = -9 - 7m$

11)  $|-10 + m| = 16$

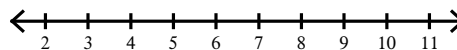
12)  $-7\left|\frac{v}{7}\right| = -9$

**Solve each inequality and graph its solution.**

13)  $-8x + 2 - 8 < -14$

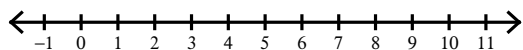


14)  $-6k + 3(4k + 3) \geq 45$

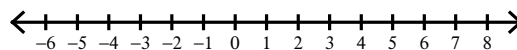


Solve each compound inequality and graph its solution.

15)  $-8 < x - 10 < 0$

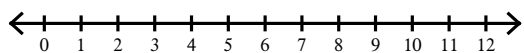


16)  $3 + x \geq 6$  or  $x - 2 < -3$

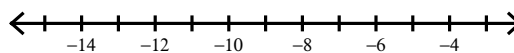


Solve each inequality and graph its solution.

17)  $|n - 6| \leq 5$



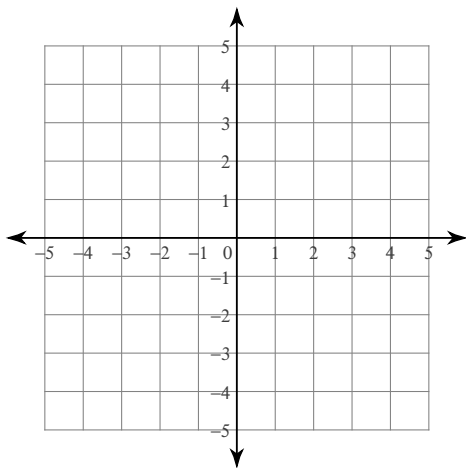
18)  $-10|x + 9| > -30$



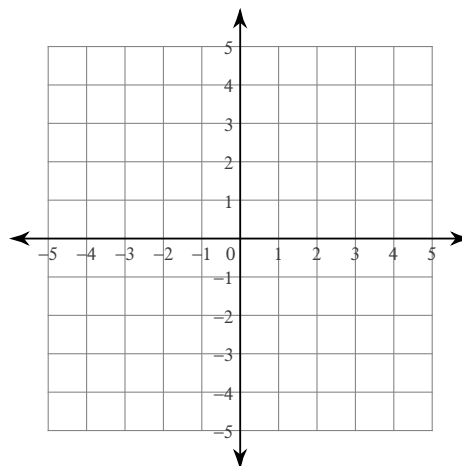
Solve each system by graphing.

19)  $y = -\frac{1}{4}x - 1$

$y = -\frac{1}{4}x + 1$



20)  $x + y = 2$   
 $4x + y = -1$



Solve each system algebraically.

21)  $5x - 6y = -3$   
 $7x + y = -23$

22)  $12x - 40y = 0$   
 $3x - 10y = 0$

**Factor each completely.**

23)  $n^2 - 3n - 10$

24)  $m^2 - 14m + 48$

25)  $3m^2 - 15m - 72$

26)  $4r^2 - 8r - 140$

27)  $7x^2 - 13x + 6$

28)  $2n^2 - 21n + 54$

29)  $6k^2 + 17k + 12$

30)  $10a^2 - 9a - 7$

31)  $16n^2 + 24n + 9$

32)  $25k^2 - 9$

**Solve each equation by factoring.**

33)  $(a - 7)(a + 7) = 0$

34)  $m^2 = -14m - 49$

35)  $x^2 - 30 = -x$

36)  $p^2 + 5p + 3 = -3$

**Solve each equation with the quadratic formula.**

37)  $12p^2 - 2p - 13 = 0$

38)  $6x^2 = -5x + 4$

Solve each equation by taking square roots.

39)  $v^2 = 24$

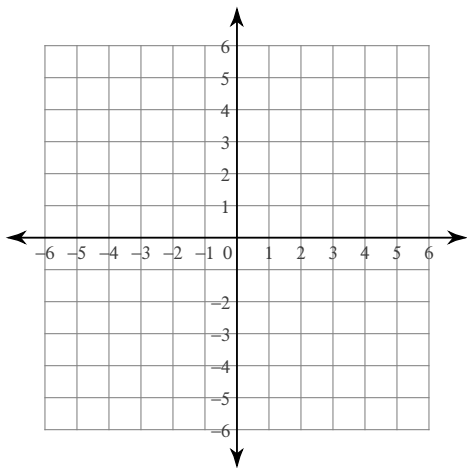
40)  $n^2 + 7 = 11$

41)  $n^2 + 8 = 76$

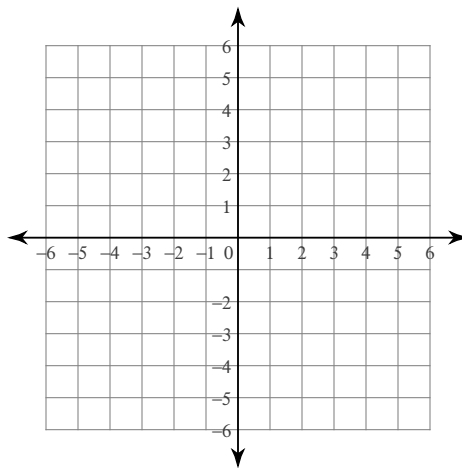
42)  $3n^2 - 1 = 221$

Sketch the graph of each line.

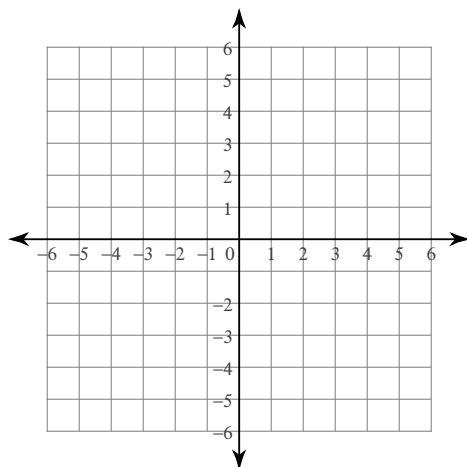
43)  $y = -2x + 2$



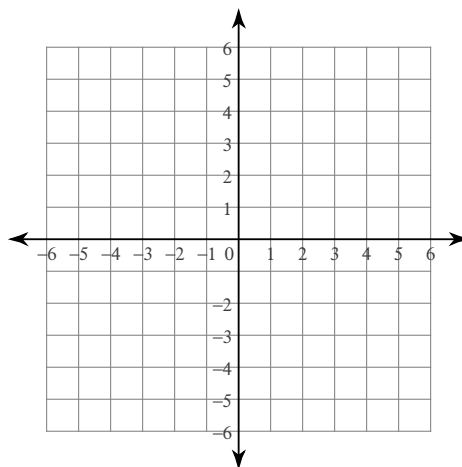
44)  $x + y = -4$



45)  $y = -4$

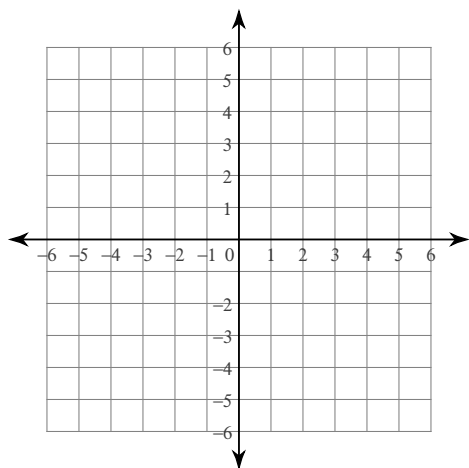


46)  $x = 4$

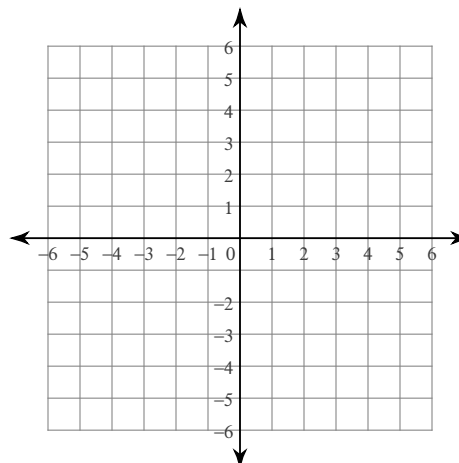


Sketch the graph of each linear inequality.

47)  $y < -2x + 3$

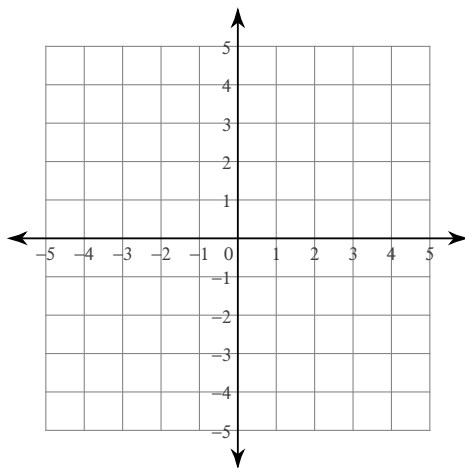


48)  $y \geq -\frac{1}{3}x - 1$



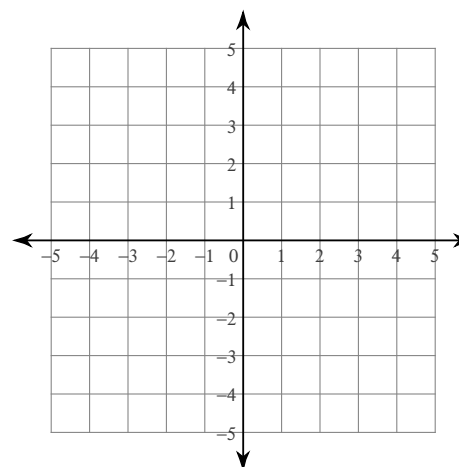
Sketch the solution to each system of inequalities.

49)  $x > -1$   
 $x - y \leq 2$



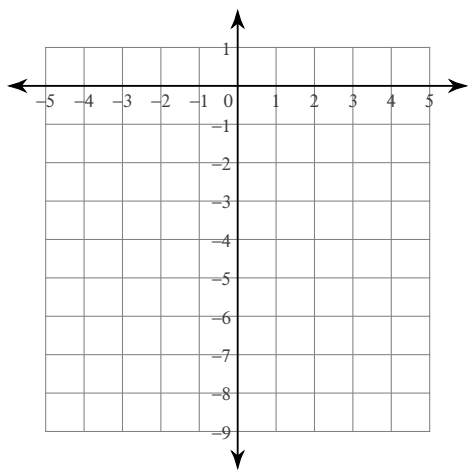
50)  $y \geq \frac{1}{3}x - 3$

$y > -\frac{1}{3}x - 1$

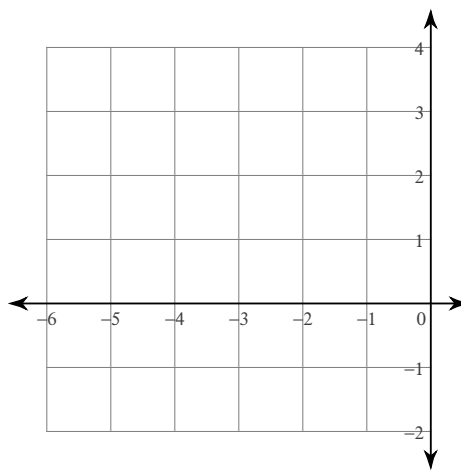


Sketch the graph of each function.

51)  $y = -2x^2$



52)  $y = x^2 + 6x + 8$



Simplify.

53)  $(4a^4 - 4a - 5a^2) + (3a + 6a^4 - 8a^2)$

54)  $(2x - 4x^3 - 5x^2) - (8x - 3x^3 - 8x^2)$

Find each product.

55)  $(2x + 6)^2$

56)  $(k + 5)^2$

# Answers to Algebra 2

1)  $-\frac{188}{45}$

2)  $\frac{7}{20}$

3)  $-3.46$

4)  $-13.524$

5)  $2\sqrt{7}$

6)  $2\sqrt{5}$

7)  $6\sqrt{2}$

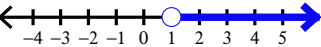
8)  $4\sqrt{3}$

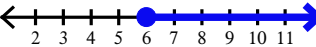
9) { All real numbers. }

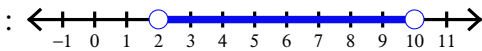
10) {0}

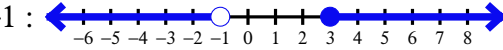
11) {26, -6}

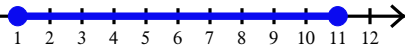
12) {9, -9}

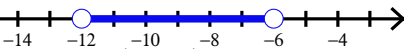
13)  $x > 1$ : 

14)  $k \geq 6$ : 

15)  $2 < x < 10$ : 

16)  $x \geq 3$  or  $x < -1$ : 

17)  $1 \leq n \leq 11$ : 

18)  $-12 < x < -6$ : 

19) No solution

20)  $(-1, 3)$

21)  $(-3, -2)$

22) Infinite number of solutions

23)  $(n - 5)(n + 2)$

24)  $(m - 8)(m - 6)$

25)  $3(m + 3)(m - 8)$

26)  $4(r + 5)(r - 7)$

27)  $(7x - 6)(x - 1)$

28)  $(2n - 9)(n - 6)$

29)  $(2k + 3)(3k + 4)$

30)  $(2a + 1)(5a - 7)$

31)  $(4n + 3)^2$

32)  $(5k + 3)(5k - 3)$

33) {7, -7}

34) {-7}

35) {5, -6}

36) {-2, -3}

37)  $\left\{ \frac{1 + \sqrt{157}}{12}, \frac{1 - \sqrt{157}}{12} \right\}$

38)  $\left\{ \frac{1}{2}, -\frac{4}{3} \right\}$

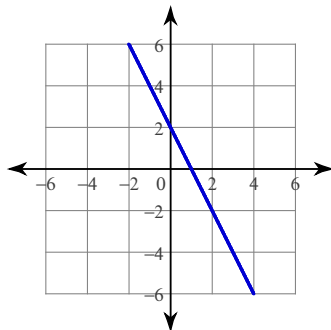
39)  $\{2\sqrt{6}, -2\sqrt{6}\}$

40) {2, -2}

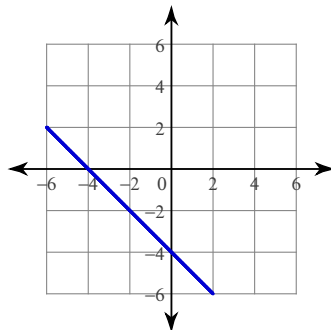
41)  $\{2\sqrt{17}, -2\sqrt{17}\}$

42)  $\{\sqrt{74}, -\sqrt{74}\}$

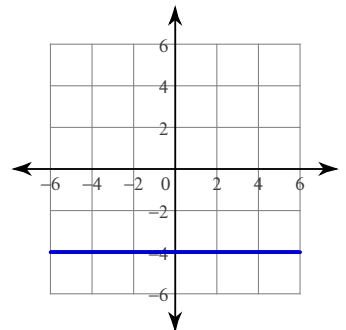
43)



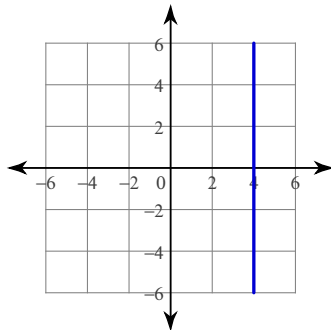
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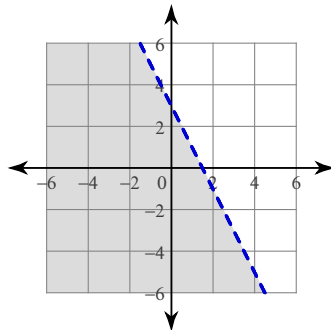
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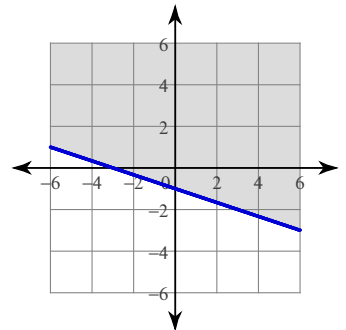
46)



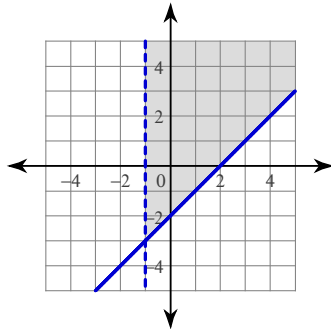
47)



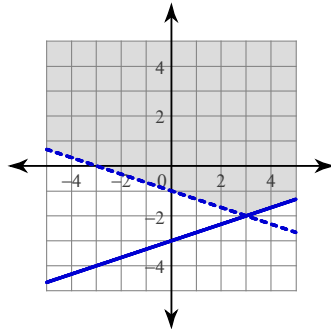
48)



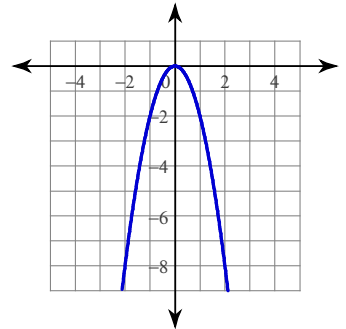
49)



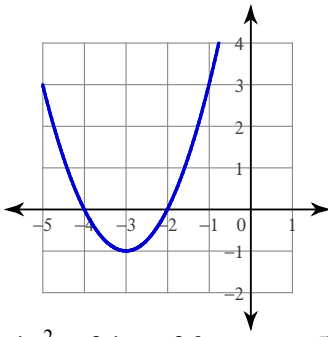
50)



51)



52)



53)  $10a^4 - 13a^2 - a$

54)  $-x^3 + 3x^2 - 6x$

55)  $4x^2 + 24x + 36$

56)  $k^2 + 10k + 25$