

## Summer Math Packet

**Evaluate each expression.**

1)  $\frac{(5-2) \times 2}{-6 \times (-1)^2}$

2)  $-2 \times -5 + 4 - (-4 + 3) - 1 + 3$

**Evaluate each using the values given.**

3)  $y - 4 + z - \left(4 + \frac{z}{2} - (y + 4)\right)$ ; use  $y = 6$ , and  $z = -2$

4)  $x + z \left(-x - \frac{z}{6}\right) - (z + 4)$ ; use  $x = -3$ , and  $z = -6$

**Solve each equation.**

5)  $-27 = 5(7 - 4m) - 7(2 + 4m)$

6)  $6(3 - 7x) - (2x - 3) = 65$

7)  $-6(2n + 8) = 2(1 - 2n) + 2n$

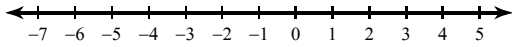
8)  $2(6x - 3) = -3(-5x + 4)$

9)  $4 + |9k + 6| = 16$

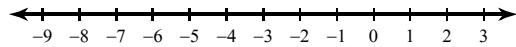
10)  $8|5x + 1| = 32$

Solve each inequality and graph its solution.

11)  $-3 - 6|2 - 7r| \geq -117$

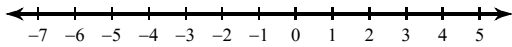


12)  $3 - 7|3 - 8a| > -74$

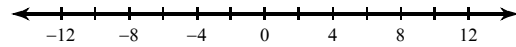


Solve each compound inequality and graph its solution.

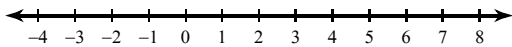
13)  $-14 < 10 - 8r < 42$



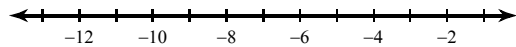
14)  $1 + 6x < -47$  or  $10x + 6 > 86$



15)  $6 - 3x < 6$  and  $5x + 1 \leq 36$



16)  $-n + 3 \geq 6$  and  $5n - 2 > -52$



Each table represents a relation. Determine the domain/range and if the relation is a function.

17)

$x$	$y$
-6	0
-4	7
-2	5
0	-4
5	0

18)

$x$	$y$
-7	2
-6	-5
-6	1
1	-5
6	-1

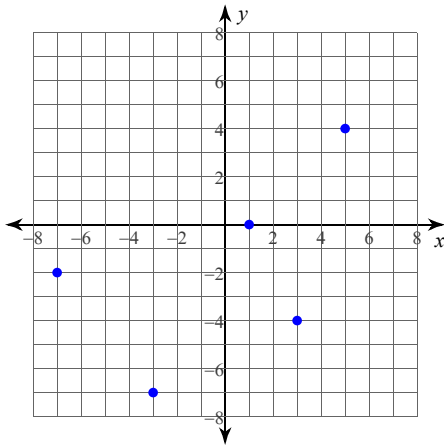
Each set of ordered pairs represents a relation. Determine the domain/range and if the relation is a function.

19)  $\{(-7, -2), (-4, -3), (-3, 4), (1, 7), (5, 5)\}$

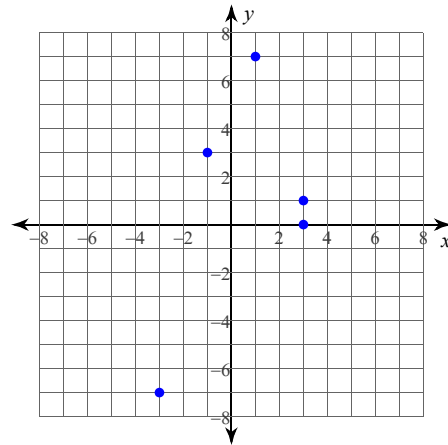
20)  $\{(-2, -4), (-2, 0), (0, 1), (4, -2), (7, 1)\}$

Each graph represents a relation. Determine the domain/range and if the relation is a function.

21)

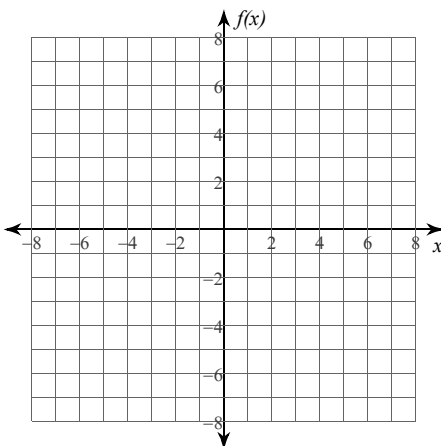


22)

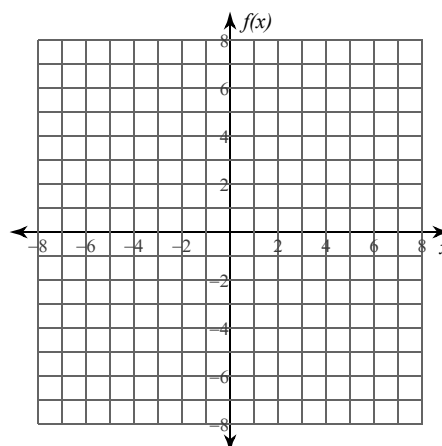


Graph each function for the given domain.

23)  $f(x) = -3x - 6$   
 Domain:  $\{-4, -3, -2, -1, 0\}$

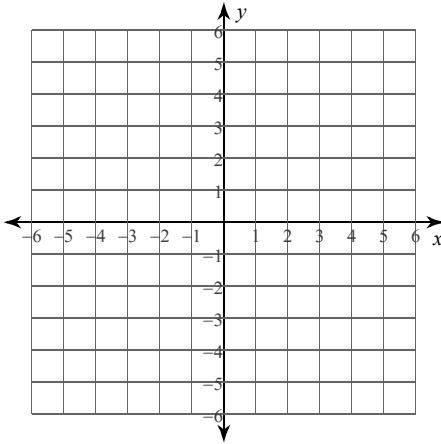


24)  $f(x) = |x - 3| - 2$   
 Domain:  $\{-5, -4, -2, 3, 8\}$

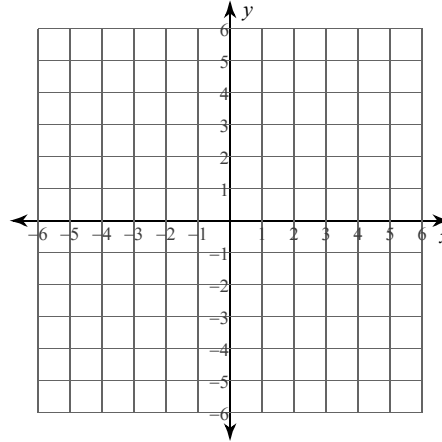


Sketch the graph of each line.

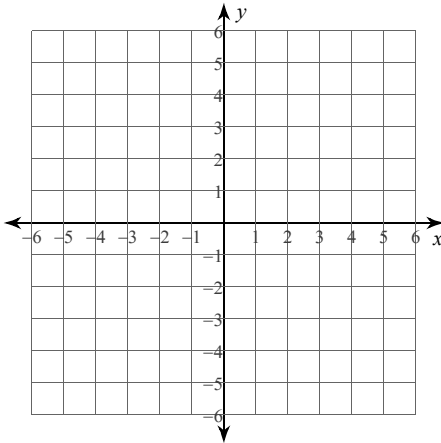
25)  $y = -\frac{2}{3}x - 2$



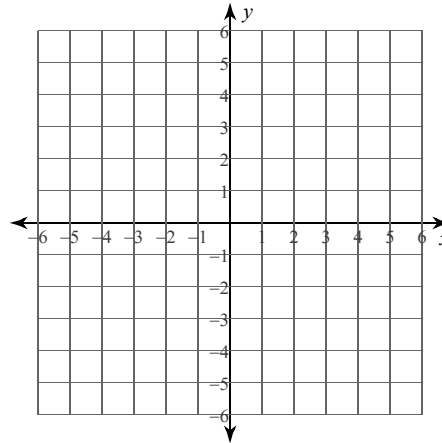
26)  $y = -2x - 4$



27)  $x + y = 1$



28)  $3x + 2y = 4$



**Write the slope-intercept form of the equation of each line.**

29)  $7x + 11y = 53$

30)  $5x - y = -29$

31)  $y - 5 = -(x + 3)$

32)  $y = -(x - 3)$

**Write the slope-intercept form of the equation of the line through the given points.**

33) through:  $(-5, -5)$  and  $(0, 1)$

34) through:  $(-4, -5)$  and  $(0, 3)$

**Write the slope-intercept form of the equation of the line through the given point with the given slope.**

35) through:  $(4, 0)$ , slope =  $-\frac{3}{4}$

36) through:  $(-5, 2)$ , slope =  $-\frac{3}{5}$

**Write the slope-intercept form of the equation of the line described.**

37) through:  $(3, 1)$ , parallel to  $y = -\frac{4}{3}x - 3$

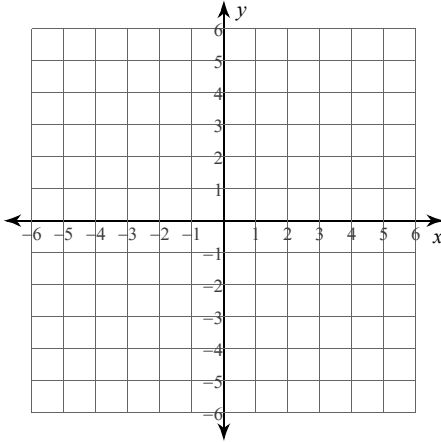
38) through:  $(4, 5)$ , parallel to  $y = 2x + 1$

39) through:  $(-5, 2)$ , perp. to  $y = \frac{5}{2}x - 4$

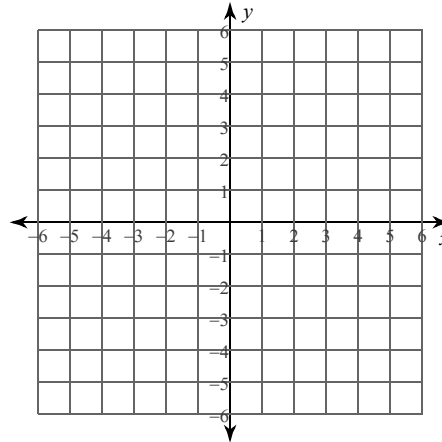
40) through:  $(5, 2)$ , perp. to  $y = \frac{5}{3}x - 2$

Sketch the graph of each linear inequality.

41)  $y < 3x - 5$

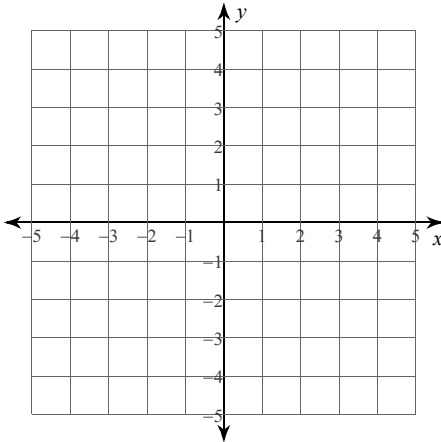


42)  $y \leq \frac{1}{5}x - 4$

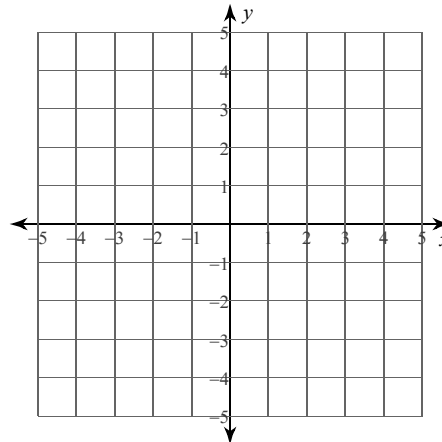


Sketch the solution to each system of inequalities.

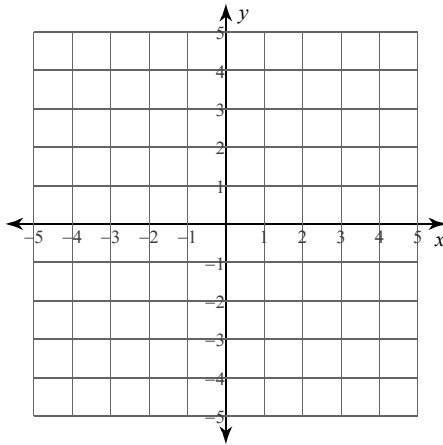
43)  $y \leq -5x - 3$   
 $y \leq -x + 1$



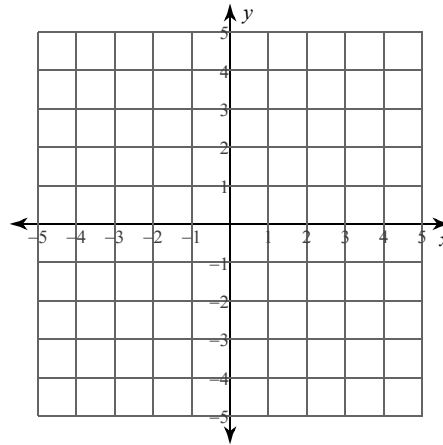
44)  $y > -\frac{4}{3}x - 2$   
 $y \leq -\frac{4}{3}x + 3$



$$45) \begin{aligned} x &\geq -1 \\ x - y &> -2 \end{aligned}$$



$$46) \begin{aligned} 3x + y &\geq -2 \\ x - y &> -2 \end{aligned}$$



**Solve each system by elimination.**

$$47) \begin{aligned} 3x + 5y - 5z &= 27 \\ -3x - y - 4z &= 12 \\ -4x - 2y + 3z &= -11 \end{aligned}$$

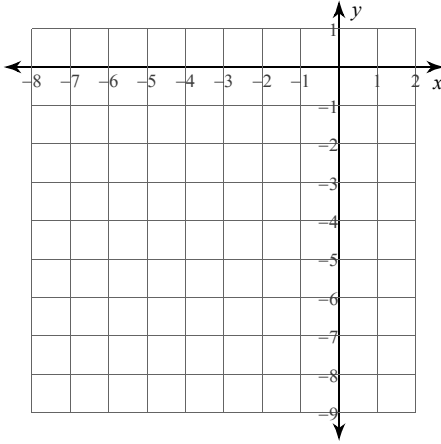
$$48) \begin{aligned} -4x - y + 3z &= 3 \\ -4x - 4y + 9z &= -21 \\ 4x + 6y - 6z &= 30 \end{aligned}$$

$$49) \begin{aligned} 3x + 2y + z &= -9 \\ 3x - 4y &= -12 \\ -3x - 5y - 6z &= -6 \end{aligned}$$

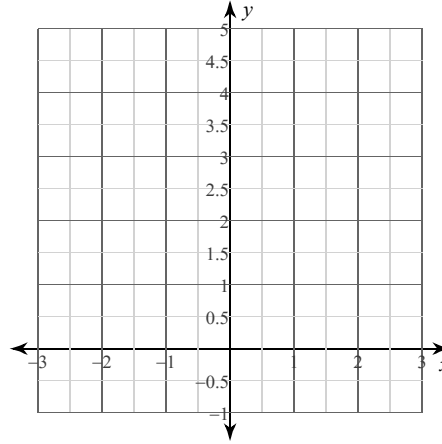
$$50) \begin{aligned} 4x + 5y - 6z &= 1 \\ -4x + 4y - 3z &= -1 \\ -4x + 4y - 5z &= 9 \end{aligned}$$

Sketch the graph of each function.

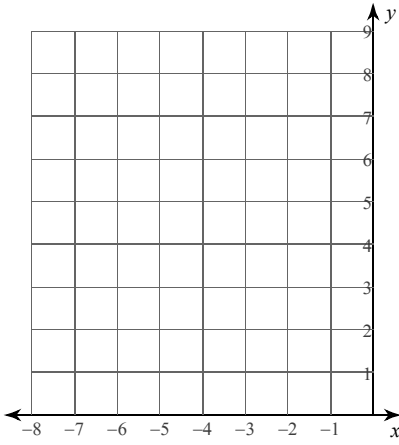
51)  $f(x) = -2x^2$



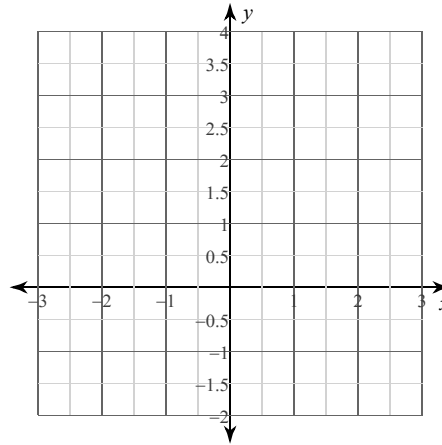
52)  $f(x) = x^2$



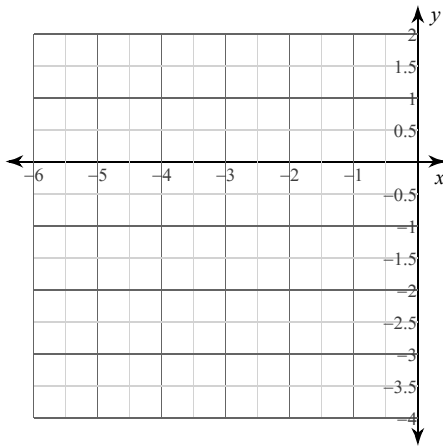
53)  $f(x) = x^2 + 6x + 13$



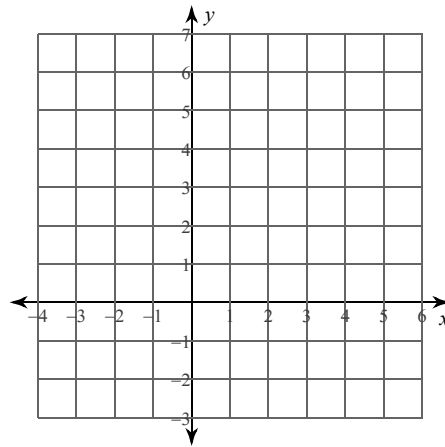
54)  $f(x) = -x^2 - 2x + 2$



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



56)  $f(x) = 2x^2 - 8x + 6$



**Factor each completely.**

57)  $2x^2 - 6x - 8$

58)  $6x^2 + 30x - 216$

59)  $5k^2 - 25k - 250$

60)  $p^3 + 7p^2 - 18p$

61)  $10a^2 + 80a$

62)  $6n^2 + 29n + 30$

63)  $8a^2 + 12a$

64)  $4v^3 - 36v^2 + 81v$

65)  $-24x^2 + 21x + 3$

66)  $-4v^2 + 35v + 50$

**Find the value of c that completes the square.**

67)  $x^2 - 7x + c$

68)  $a^2 + 38a + c$

**Solve each equation by completing the square.**

69)  $a^2 + 16a - 63 = 0$

70)  $n^2 + 4n - 59 = 0$

71)  $x^2 - 6x - 43 = 10$

72)  $m^2 + 2m - 41 = -4$

$$73) p^2 + 20p + 71 = 4$$

$$74) v^2 + 6v + 14 = 6$$

**Factor each completely.**

$$75) 54 - 2u^3$$

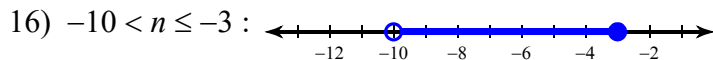
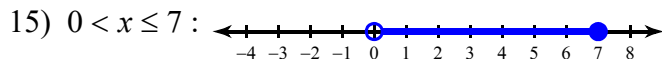
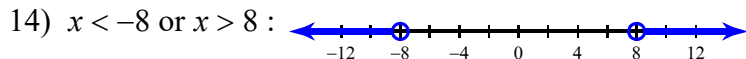
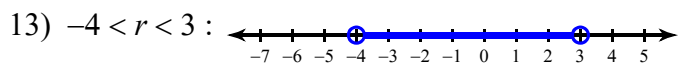
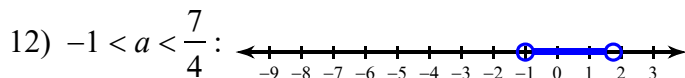
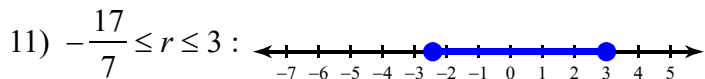
$$76) 16x^3 + 250$$

$$77) 250x^3 - 16$$

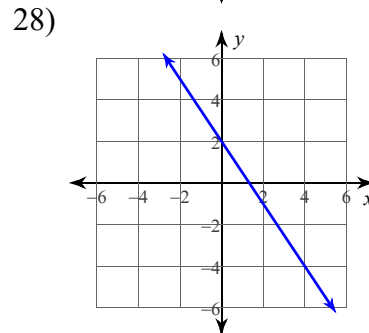
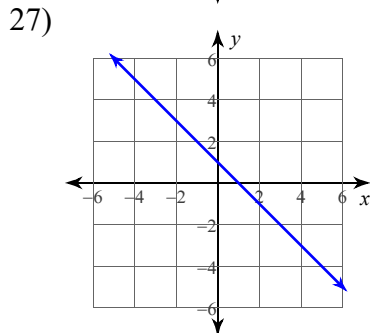
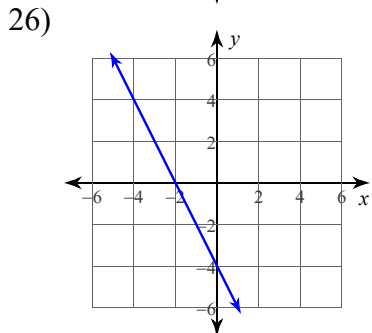
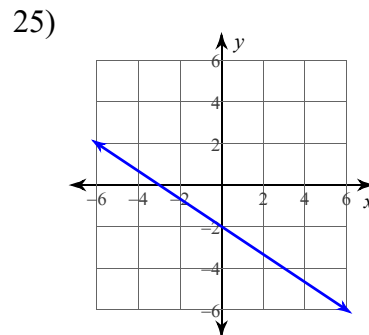
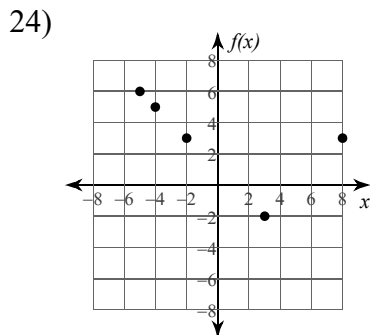
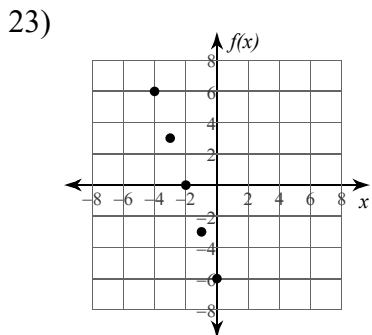
$$78) 648x^3 - 3$$

# Answers to Summer Math Packet

- 1)  $-1$                       2)  $17$                       3)  $7$                       4)  $-25$   
 5)  $\{1\}$                       6)  $\{-1\}$                       7)  $\{-5\}$                       8)  $\{2\}$   
 9)  $\left\{\frac{2}{3}, -2\right\}$                       10)  $\left\{\frac{3}{5}, -1\right\}$

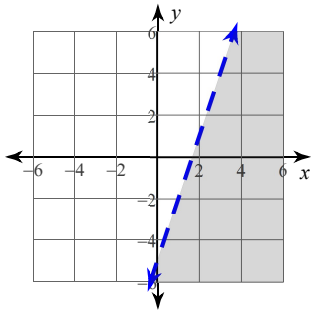


- 17) Domain:  $\{-6, -4, -2, 0, 5\}$                       18) Domain:  $\{-7, -6, 1, 6\}$   
 Range:  $\{-4, 0, 5, 7\}$                       Range:  $\{-5, -1, 1, 2\}$   
 The relation is a function.                      The relation is not a function.  
 19) Domain:  $\{-7, -4, -3, 1, 5\}$                       20) Domain:  $\{-2, 0, 4, 7\}$   
 Range:  $\{-3, -2, 4, 5, 7\}$                       Range:  $\{-4, -2, 0, 1\}$   
 The relation is a function.                      The relation is not a function.  
 21) Domain:  $\{-7, -3, 1, 3, 5\}$                       22) Domain:  $\{-3, -1, 1, 3\}$   
 Range:  $\{-7, -4, -2, 0, 4\}$                       Range:  $\{-7, 0, 1, 3, 7\}$   
 The relation is a function.                      The relation is not a function.

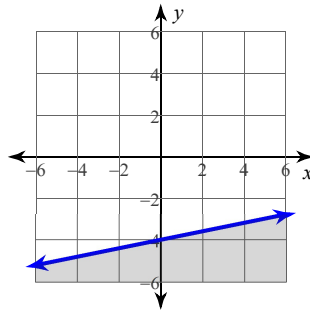


- 29)  $y = -\frac{7}{11}x + \frac{53}{11}$                       30)  $y = 5x + 29$                       31)  $y = -x + 2$                       32)  $y = -x + 3$   
 33)  $y = \frac{6}{5}x + 1$                       34)  $y = 2x + 3$                       35)  $y = -\frac{3}{4}x + 3$                       36)  $y = -\frac{3}{5}x - 1$   
 37)  $y = -\frac{4}{3}x + 5$                       38)  $y = 2x - 3$                       39)  $y = -\frac{2}{5}x$                       40)  $y = -\frac{3}{5}x + 5$

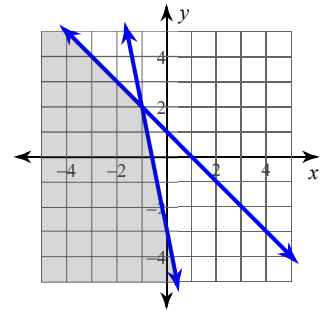
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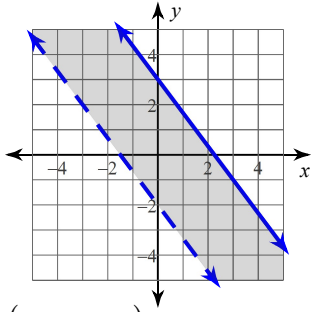
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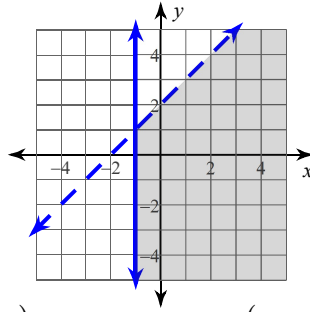
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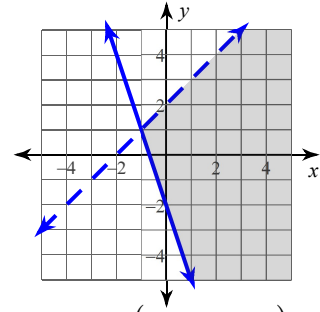
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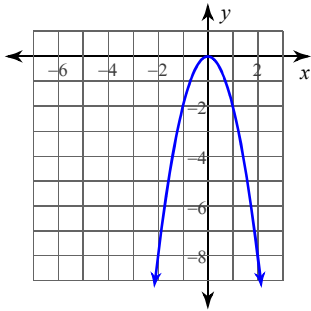
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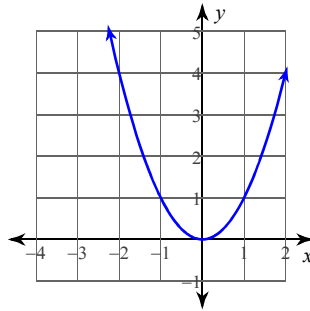
46)

47)  $(-1, 3, -3)$ 48)  $(-3, 6, -1)$ 49)  $(-4, 0, 3)$ 50)  $(-1, -5, -5)$ 

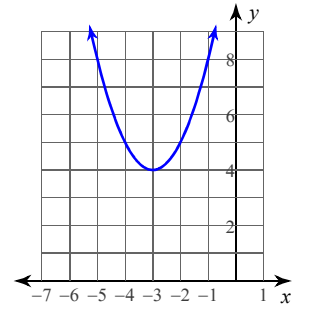
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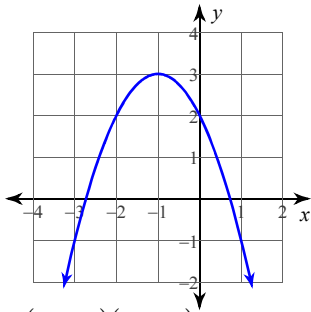
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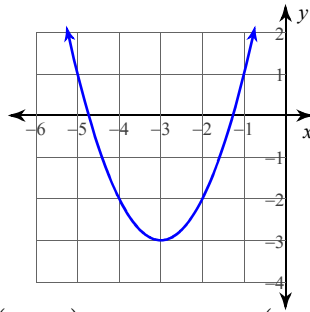
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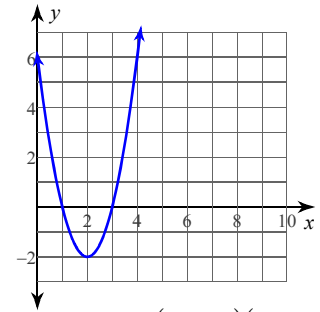
54)



55)



56)

57)  $2(x-4)(x+1)$ 58)  $6(x-4)(x+9)$ 59)  $5(k-10)(k+5)$ 60)  $p(p+9)(p-2)$ 61)  $10a(a+8)$ 62)  $(3n+10)(2n+3)$ 63)  $4a(2a+3)$ 64)  $v(2v-9)^2$ 65)  $-3(x-1)(8x+1)$ 66)  $-(v-10)(4v+5)$ 67)  $\frac{49}{4}$ 

68) 361

69)  $\{-8 + \sqrt{127}, -8 - \sqrt{127}\}$ 70)  $\{-2 + 3\sqrt{7}, -2 - 3\sqrt{7}\}$ 71)  $\{3 + \sqrt{62}, 3 - \sqrt{62}\}$ 72)  $\{-1 + \sqrt{38}, -1 - \sqrt{38}\}$ 73)  $\{-10 + \sqrt{33}, -10 - \sqrt{33}\}$ 74)  $\{-2, -4\}$ 75)  $2(3-u)(9+3u+u^2)$ 76)  $2(2x+5)(4x^2-10x+25)$ 77)  $2(5x-2)(25x^2+10x+4)$ 78)  $3(6x-1)(36x^2+6x+1)$