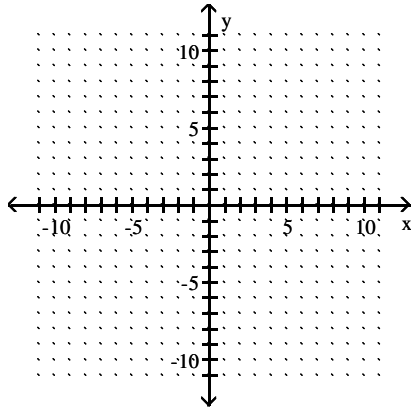


Math 100 Review 2

Graph the function.

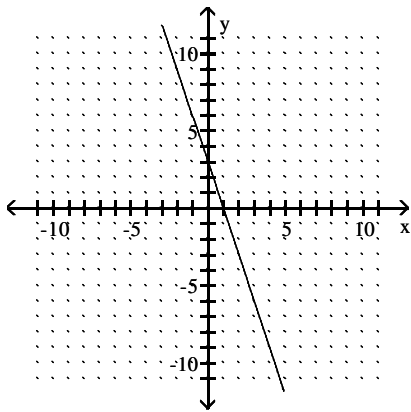
1)  $f(x) = -\frac{3}{5}x - 3$



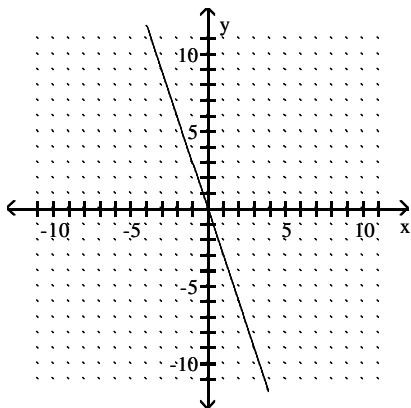
Match the linear function with its graph.

2)  $f(x) = -3x + 4$

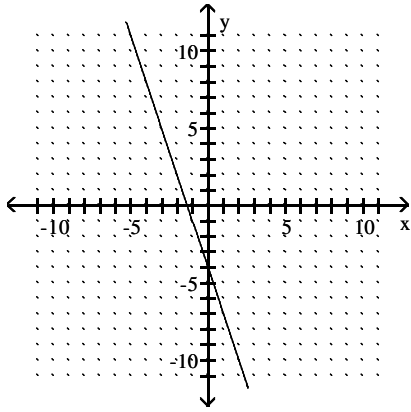
A)



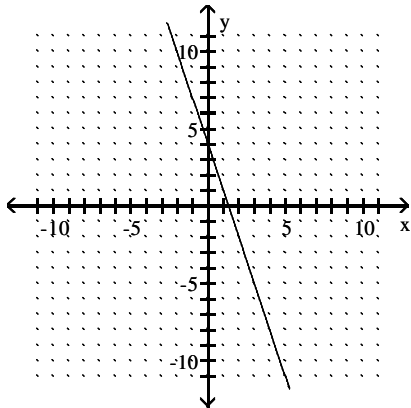
B)



C)



D)



Write an equation of the line with the given slope and containing the given point. Write the equation using function notation.

3) Slope 4; through  $(-7, 7)$

Find an equation of the line. Write the equation in standard form.

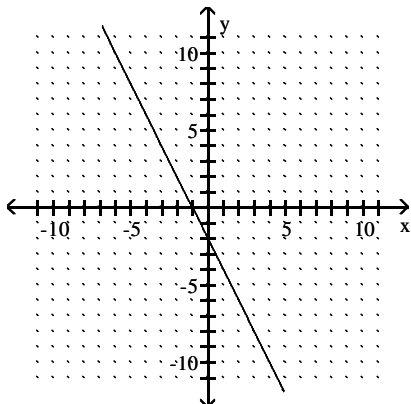
4) Through  $(1, 5)$  and  $(0, -2)$

5) Through  $(4, 5)$ ; parallel to  $8x + 3y = 3$

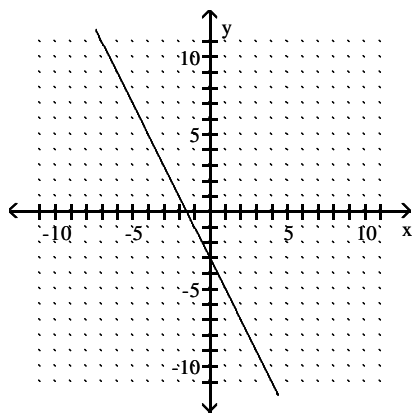
Match the linear function with its graph.

6)  $f(x) = -2x - 3$

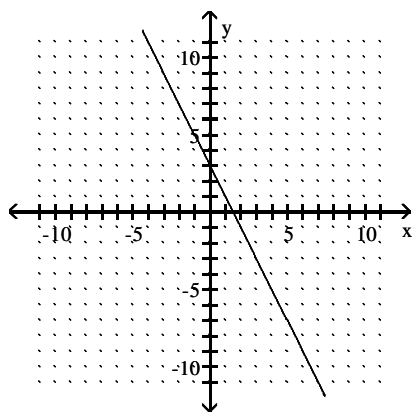
A)



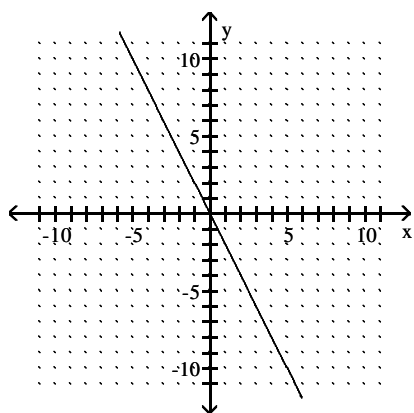
B)



C)

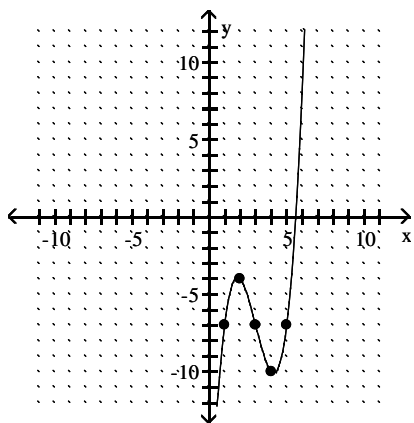


D)



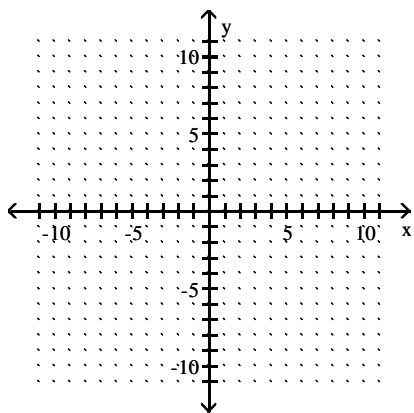
Find the indicated value.

7) Use the graph to find  $f(5)$ .

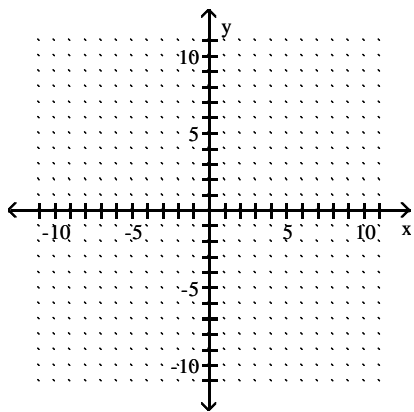


Graph the function.

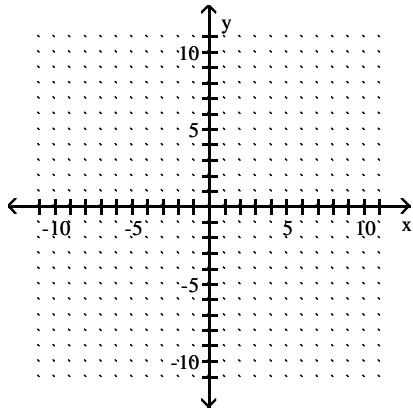
8)  $f(x) = |x| - 3$



9)  $h(x) = x^2 - 4$



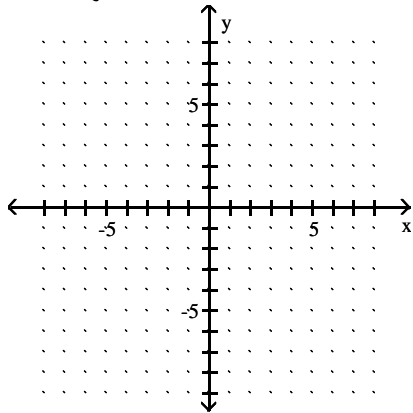
10)  $f(x) = \sqrt{x} + 5$



Graph the piecewise defined function.

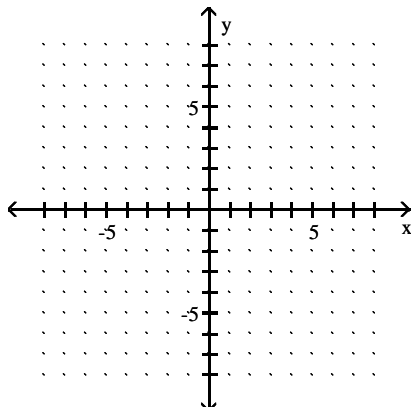
11)

$$f(x) = \begin{cases} x - 1 & \text{if } x < 1 \\ -5 & \text{if } x \geq 1 \end{cases}$$



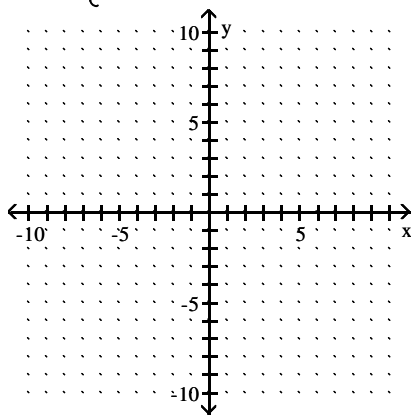
12)

$$f(x) = \begin{cases} 3x - 1 & \text{if } x \leq 0 \\ \frac{1}{3}x - 4 & \text{if } x > 0 \end{cases}$$



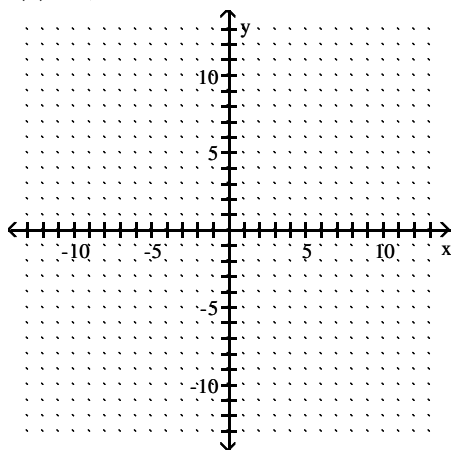
13)

$$f(x) = \begin{cases} 3x + 1 & \text{if } x \leq 2 \\ -x & \text{if } x > 2 \end{cases}$$

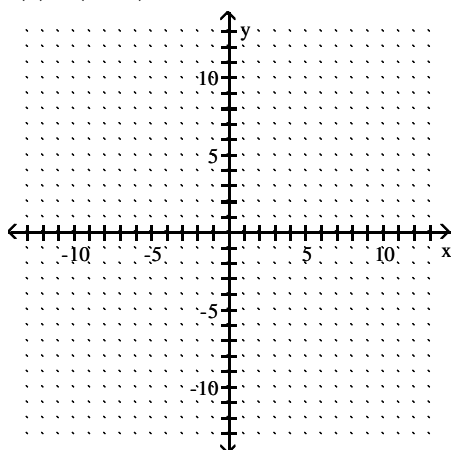


Graph the function.

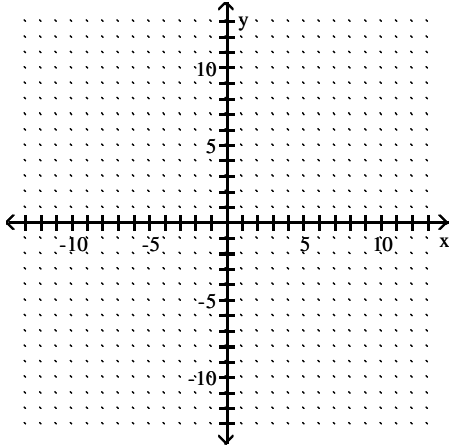
14)  $f(x) = \sqrt{x} + 4$



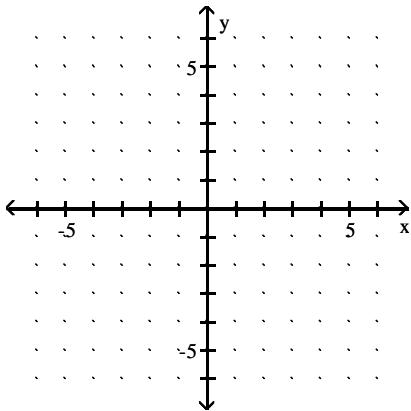
15)  $f(x) = (x + 5)^2$



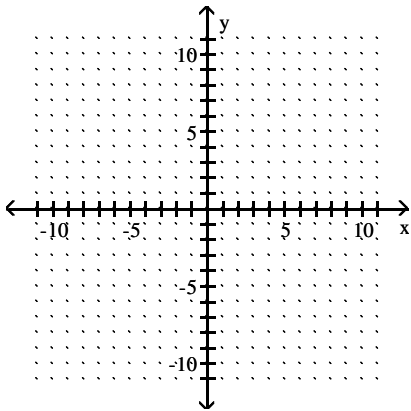
16)  $f(x) = \sqrt{x-4} + 1$



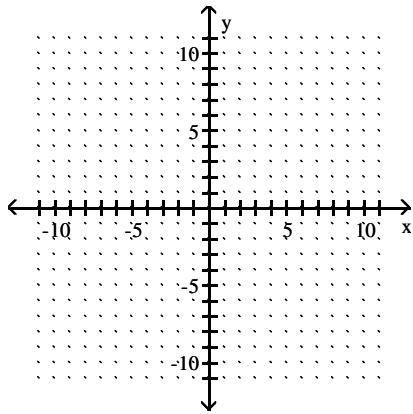
17)  $f(x) = -x^2$



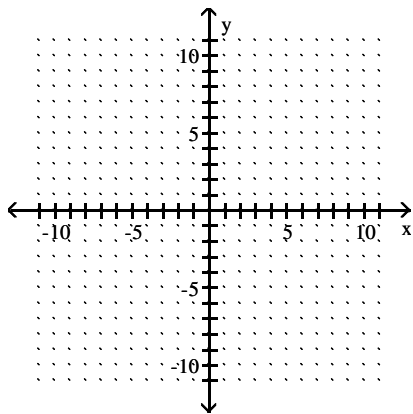
18)  $f(x) = -|x| + 3$



19)  $f(x) = -|x + 4|$



20)  $f(x) = -\sqrt{x - 1}$



**If y varies directly as x, find the direct variation equation for the situation.**

21)  $y = 2$  when  $x = 14$

**Find the square root.**

22)  $\sqrt{-36}$

**Solve.**

23) The amount of water in a leaky bucket is given by the linear function  $f(t) = 121 - 9t$ , where  $f(t)$  is in ounces and  $t$  is in minutes. Find the amount of water in the bucket after 3 minutes.

**Find an equation of the line. Write the equation using function notation.**

24) Through  $(6, 9)$ ; parallel to  $f(x) = 4x - 8$

25) Through  $(-4, 13)$ ; perpendicular to  $3x + 4y = 43$

**Solve.**

26) The amount of gas that a helicopter uses is directly proportional to the number of hours spent flying. The helicopter flies for 3 hours and uses 24 gallons of fuel. Find the number of gallons of fuel that the helicopter uses to fly for 6 hours.

**If y varies inversely as x, find the inverse variation equation for the situation.**

27)  $y = 4$  when  $x = 6$



**Write an equation to describe the variation. Use k for the constant of proportionality.**

28)  $r$  varies jointly as  $s$  and the cube of  $t$ .

**If  $y$  varies inversely as  $x$ , find the inverse variation equation for the situation.**

29)  $y = \frac{1}{2}$  when  $x = 10$

**Solve.**

30) The distance that an object falls when it is dropped is directly proportional to the square of the amount of time since it was dropped. An object falls 88.2 meters in 3 seconds. Find the distance the object falls in 5 seconds.

**Find the variation equation for the variation statement.**

31)  $c$  varies directly as  $a$  and inversely as  $b$ ;  $c = 3$  when  $a = 24$  and  $b = 32$

**Write an equation to describe the variation. Use  $k$  for the constant of proportionality.**

32)  $P$  varies directly as the square of  $R$  and inversely as the cube of  $S$ .

**Solve.**

33) Suppose that  $y$  varies directly as the square of  $x$ . If  $x$  is halved, what is the effect on  $y$ ?

34) While traveling in a car, the centrifugal force a passenger experiences as the car drives in a circle varies jointly as the mass of the passenger and the square of the speed of the car. If the a passenger experiences a force of 135 newtons when the car is moving at a speed of 50 kilometers per hour and the passenger has a mass of 60 kilograms, find the force a passenger experiences when the car is moving at 70 kilometers per hour and the passenger has a mass of 40 kilograms.

**Find an equation of the line. Write the equation using function notation.**

35) Through  $(5, 8)$ ; parallel to  $f(x) = 3x - 8$

**For the given functions  $f$  and  $g$ , find the requested function.**

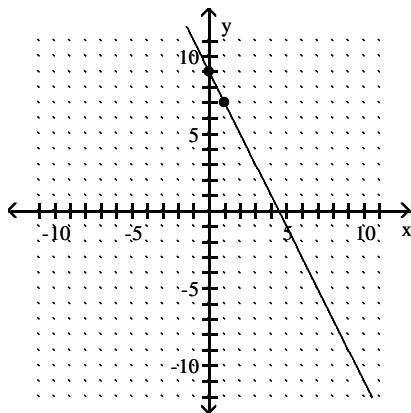
36)  $f(x) = x + 2$ ;  $g(x) = 3x + 5$  Find  $(f + g)(x)$ .

**Write an equation to describe the variation. Use  $k$  for the constant of proportionality.**

37)  $p$  varies jointly as  $q$  and the cube of  $r$ .

**Write an equation in standard form for the line graphed.**

38)



Write an equation of the line using function notation.

39) Slope 0; through  $(-6, 3)$

40) Horizontal; through  $(0, -7)$

For the given functions  $f$  and  $g$ , find the requested function.

41)  $f(x) = 3x - 2$ ;  $g(x) = 6x - 8$  Find  $(f \cdot g)(x)$ .

For the given functions  $f$  and  $g$ , find the composition.

42)  $f(x) = x^2 - 7x + 4$ ;  $g(x) = \sqrt{x}$  Find  $(f \circ g)(16)$ .

43)  $f(x) = x^2 + 4x$ ;  $g(x) = x + 4$  Find  $(f \circ g)(4)$ .

For the given functions  $f$  and  $g$ , find the requested function.

44)  $f(x) = 5x + 3$ ;  $g(x) = 5x - 4$  Find  $\left(\frac{f}{g}\right)(x)$ .

Find an equation of the line passing through the given points. Use function notation to write the equation.

45)  $(2, 17)$ ,  $(5, 41)$

For the given functions  $f$  and  $g$ , find the composition.

46)  $f(x) = \sqrt{x + 5}$ ;  $g(x) = 8x - 9$  Find  $(g \circ f)(x)$ .

Write the function  $F(x)$  as a composition of  $f$ ,  $g$ , or  $h$ .

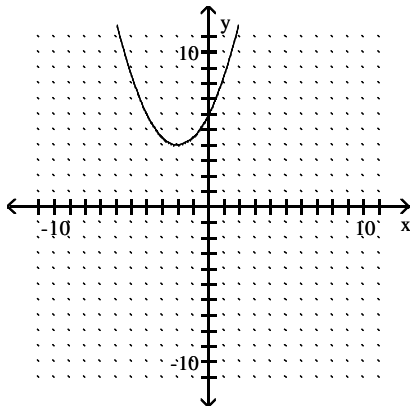
47)  $f(x) = x^2 - 2$   $g(x) = 4x$   $h(x) = \sqrt{x - 1}$   
 $F(x) = \sqrt{x^2 - 3}$

Determine whether the function is a one-to-one function.

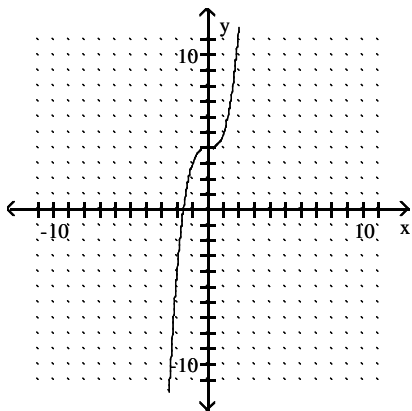
48)  $f = \{(18, -13), (-5, -9), (-11, -11)\}$

Determine whether the graph of the function is the graph of a one-to-one function.

49)



50)



If the function is one-to-one, list the inverse function by switching coordinates or inputs and outputs.

51)  $f = \{(6, 4), (12, 5), (10, 6), (8, 7)\}$

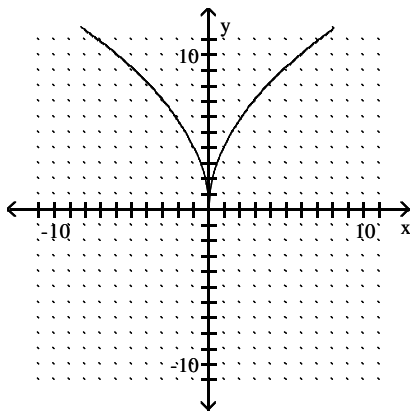
For the given one-to-one function  $f$ , find the following.

52)  $f(x) = \sqrt{3x - 2} - 2$

Find  $f(2)$  and  $f^{-1}(0)$ .

Determine whether the graph of the function is the graph of a one-to-one function.

53)



Determine whether the function is a one-to-one function.

54)  $f = \{(6, 5), (7, 5), (8, 5), (9, 9)\}$

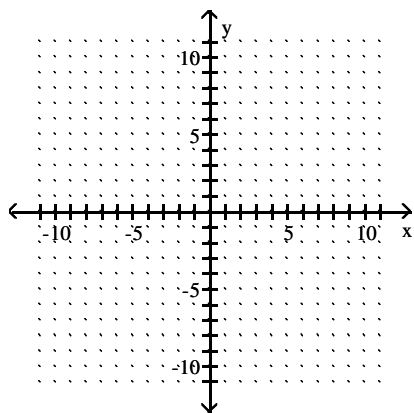
Find the inverse of the one-to-one function.

55)  $f(x) = \sqrt[3]{x - 6}$

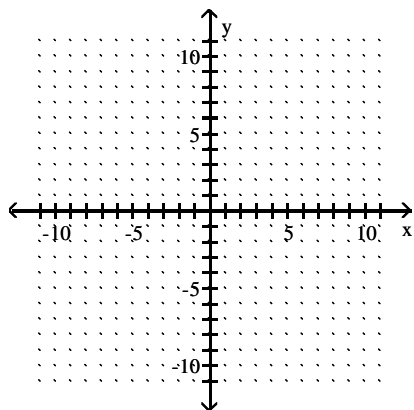
56)  $f(x) = 4x + 3$

Graph the function and its inverse on the same set of axes.

57)  $f(x) = -2x + 2$

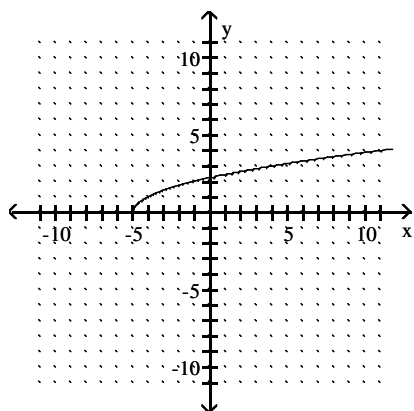


58)  $f(x) = \frac{1}{2}x + 4$



Graph the inverse of the function on the same set of axes.

59)



Determine whether the functions  $f$  and  $g$  are inverses of each other.

60)  $f(x) = 2x + 7$ ;  $g(x) = \frac{x+7}{2}$

$$61) f(x) = 4x + 4; g(x) = \frac{x - 4}{4}$$

**Find the inverse of the one-to-one function.**

$$62) f(x) = \frac{5}{7x - 3}$$

**Determine whether the functions f and g are inverses of each other.**

$$63) f(x) = x^3 + 8; g(x) = \sqrt[3]{x - 8}$$

$$64) f(x) = (x + 6)^3 + 5; g(x) = \sqrt[3]{x - 5} + 6$$

**For the given functions f and g, find the composition.**

$$65) f(x) = x^3 - 5x; g(x) = 3x \quad \text{Find } (g \circ f)(x).$$

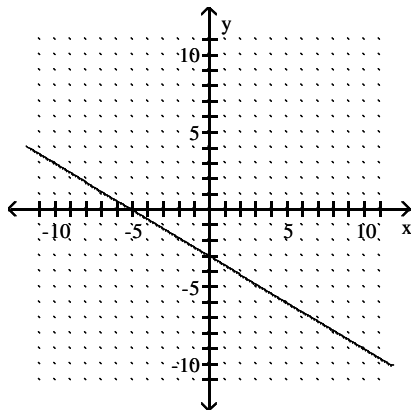
**Use function notation to write the equation of the line with the given slope and y-intercept.**

$$66) \text{Slope } \frac{4}{3}; \text{ y-intercept } (0, 3)$$

Answer Key

Testname: MTH100R2SUM2010

1)



2) D

3)  $f(x) = 4x + 35$

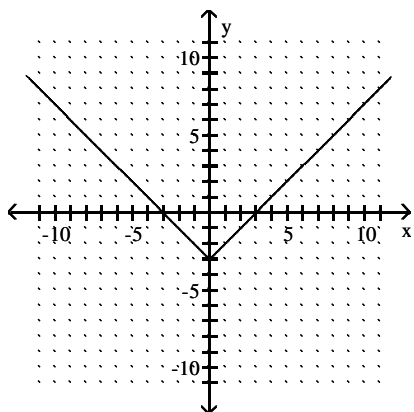
4)  $7x - y = 2$

5)  $8x + 3y = 47$

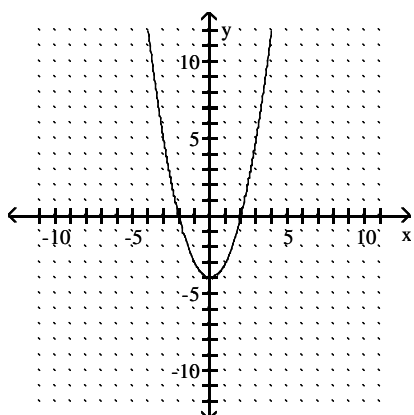
6) B

7) -7

8)



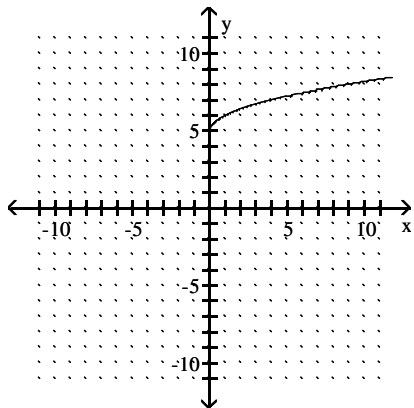
9)



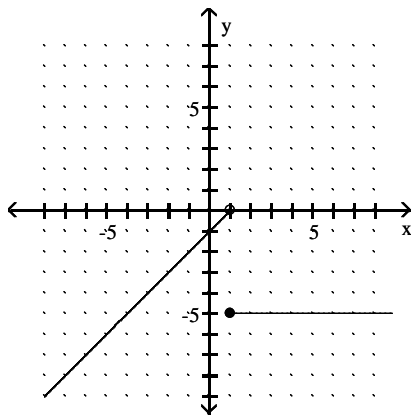
Answer Key

Testname: MTH100R2SUM2010

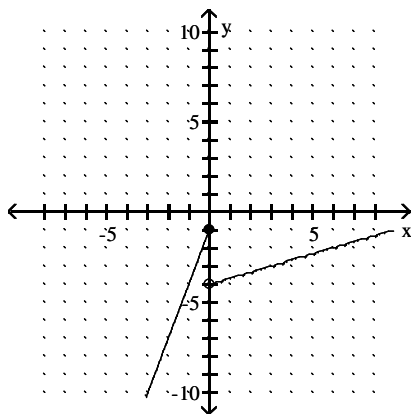
10)



11)



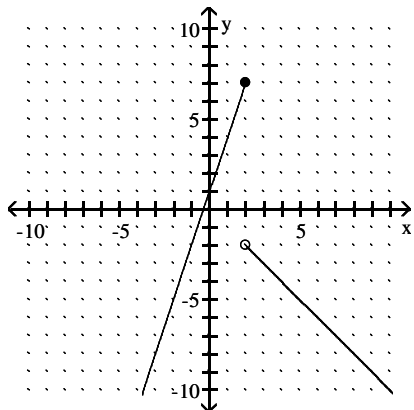
12)



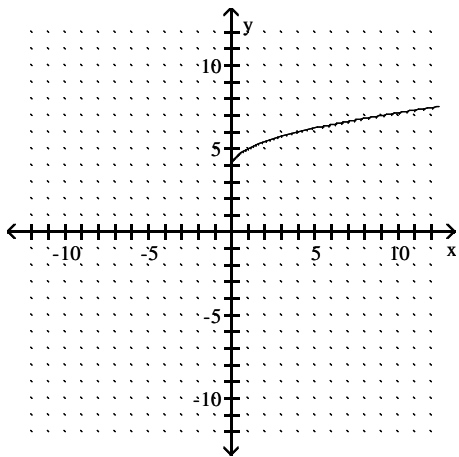
Answer Key

Testname: MTH100R2SUM2010

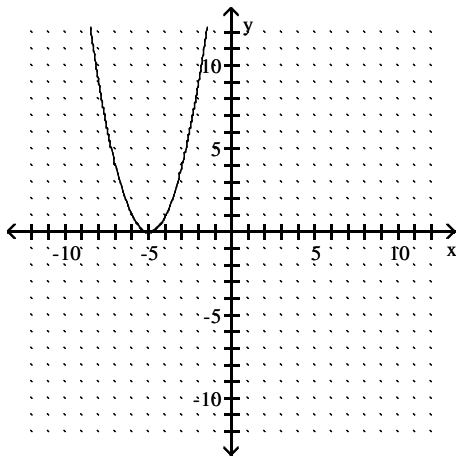
13)



14)



15)

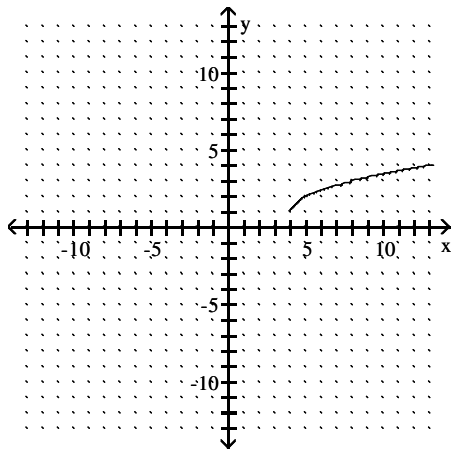




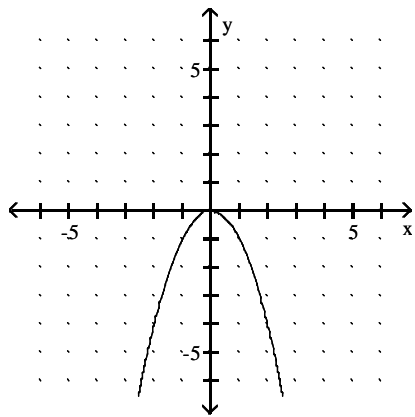
Answer Key

Testname: MTH100R2SUM2010

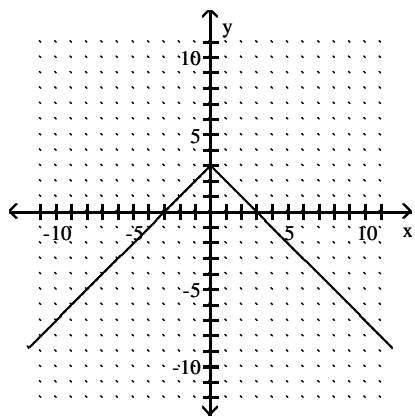
16)



17)



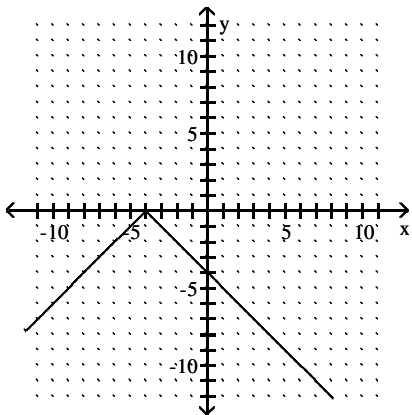
18)



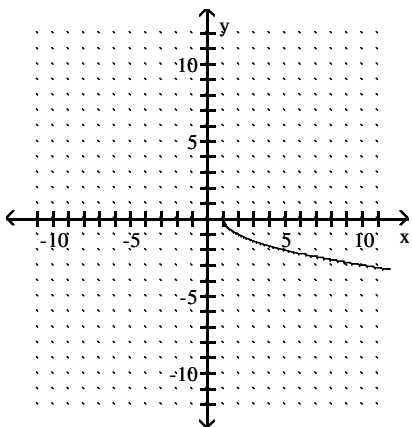
Answer Key

Testname: MTH100R2SUM2010

19)



20)



21)  $y = \frac{1}{7}x$

22) not a real number

23) 94 oz

24)  $f(x) = 4x - 15$

25)  $f(x) = \frac{4}{3}x + \frac{55}{3}$

26) 48 gallons

27)  $y = \frac{24}{x}$

28)  $r = kst^3$

29)  $y = \frac{5}{x}$

30) 245 meters

31)  $c = \frac{4a}{b}$

32)  $P = \frac{kR^2}{S^3}$

33) It's multiplied by  $\frac{1}{4}$ .

34) 176.4 newtons

# Answer Key

Testname: MTH100R2SUM2010

35)  $f(x) = 3x - 7$

36)  $(f + g)(x) = 4x + 7$

37)  $p = kqr^3$

38)  $2x + y = 9$

39)  $f(x) = 3$

40)  $f(x) = -7$

41)  $(f \cdot g)(x) = 18x^2 - 36x + 16$

42)  $-8$

43)  $96$

44)  $\left(\frac{f}{g}\right)(x) = \frac{5x + 3}{5x - 4}$ , where  $x \neq \frac{4}{5}$

45)  $f(x) = 8x + 1$

46)  $8\sqrt{x + 5} - 9$

47)  $F(x) = (h \circ f)(x)$

48) one-to-one

49) No

50) Yes

51)  $f^{-1} = \{(4, 6), (5, 12), (6, 10), (7, 8)\}$

52)  $f(2) = 0$ ;  $f^{-1}(0) = 2$

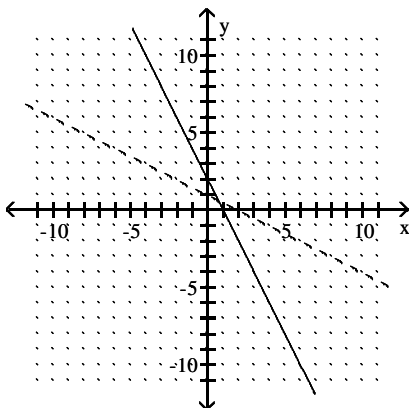
53) No

54) not one-to-one

55)  $f^{-1}(x) = x^3 + 6$

56)  $f^{-1}(x) = \frac{x - 3}{4}$

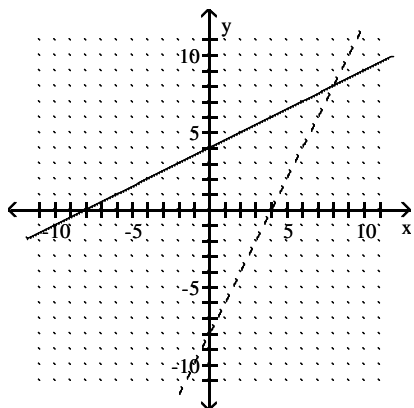
57)



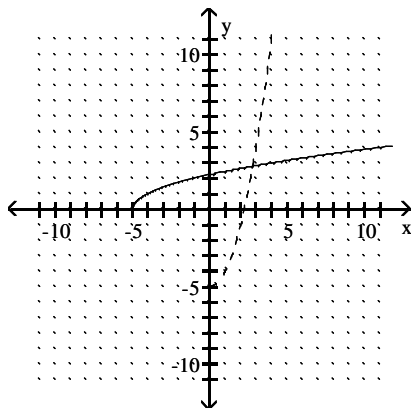
Answer Key

Testname: MTH100R2SUM2010

58)



59)



60) No

61) Yes

62)  $f^{-1}(x) = \frac{5}{7x} + \frac{3}{7}$

63) Yes

64) No

65)  $3x^3 - 15x$

66)  $f(x) = \frac{4}{3}x + 3$