

1. Fill in the blank.

For any function, the set of all inputs, or first values, is called the (1) \_\_\_\_\_

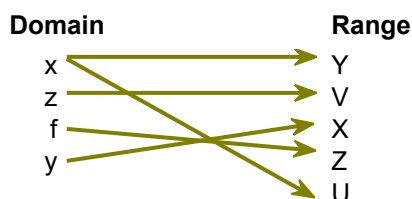
- (1) ☐ domain.  
☐ range.  
☐ element.

2. Fill in the blank.

The notation  $f(3)$  can be read (1) \_\_\_\_\_

- (1) ☐ "3 of f."  
☐ "f times 3."  
☐ "f of 3."

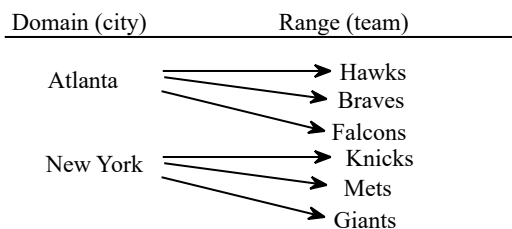
3. Determine whether the correspondence is a function.



Is this correspondence a function?

- ☐ No  
☐ Yes

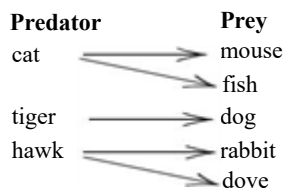
4. Determine whether the correspondence is a function.



Is this correspondence a function?

- ☐ No  
☐ Yes

5. Determine whether the correspondence is a function.



Is the given correspondence a function?

- ☐ No  
☐ Yes

6. Determine whether the following is a function.

The correspondence that assigns to a price its barcode

---

Choose the correct answer below.

- ☐ A. The correspondence is a function.
- ☐ B. The correspondence is not a function.
- 

7. For the following correspondence, **(a)** write the domain, **(b)** write the range, and **(c)** determine whether the correspondence is a function.

$\{(8, -2), (5,0), (7,3), (2,7), (6, 3), (3, 8)\}$

---

**(a)** Write the domain. Choose the correct answer below.

- ☐ A.  $\{7,6,8, -2,0\}$
- ☐ B.  $\{-2,0,2,5,3\}$
- ☐ C.  $\{8,5,7,2,6,3\}$
- ☐ D.  $\{-2,0,3,7,8\}$

**(b)** Write the range. Choose the correct answer below.

- ☐ A.  $\{7,6,8, -2,0\}$
- ☐ B.  $\{-2,0,3,7,8\}$
- ☐ C.  $\{7,6,8,2,5,3\}$
- ☐ D.  $\{-2,0,2,5,3\}$

**(c)** Determine whether the correspondence is a function. Choose the correct answer below.

- ☐ No
- ☐ Yes
-

8. Use the graph to find the following.

$f(2) =$  \_\_\_\_\_

What is the domain?

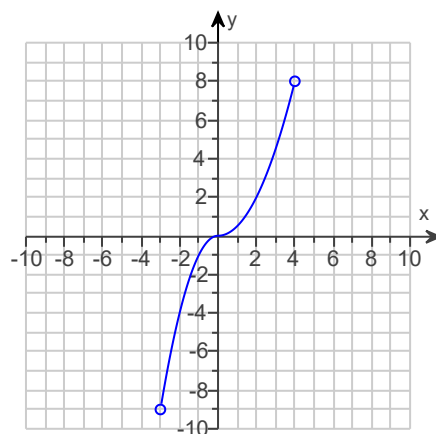
- ☐ A.  $\{x \mid -10 < x < 10\}$   
☐ B.  $\{x \mid -3 < x < 4\}$   
☐ C.  $\{x \mid -9 < x < 8\}$   
☐ D. All real numbers

What is the set of all x-values such that  $f(x) = -4$ ?

- ☐ A.  $\{1\}$   
☐ B.  $\{x \mid -3 < x < 4\}$   
☐ C.  $\{-2\}$   
☐ D.  $\emptyset$

What is the range?

- ☐ A.  $\{y \mid -10 < y < 10\}$   
☐ B.  $\{y \mid -9 < y < 8\}$   
☐ C.  $\{y \mid -3 < y < 4\}$   
☐ D. All real numbers



9. For the graph, determine the following.

- a)  $f(-1)$   
 b) the domain  
 c) any x-values for which  $f(x) = 2$   
 d) the range

a)  $f(-1) =$  \_\_\_\_\_

b) Choose the correct domain.

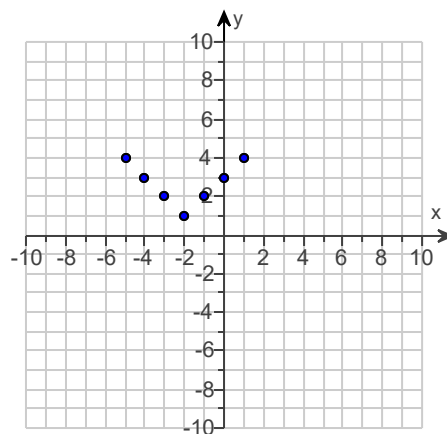
- ☐ A.  $\{1, 2, 3, 4\}$   
☐ B. All real numbers  
☐ C.  $\{-5, -4, -3, -2, -1, 0, 1\}$   
☐ D.  $\{x \mid -5 \leq x \leq 1\}$

c) What is the set of all x-value(s) for which  $f(x) = 2$ ?

- ☐ A.  $\{-2\}$   
☐ B.  $\{x \mid -3 \leq x \leq -1\}$   
☐ C.  $\emptyset$   
☐ D.  $\{-3, -1\}$

d) Choose the correct range.

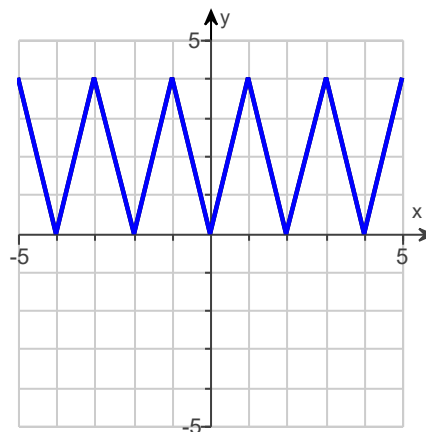
- ☐ A.  $\{y \mid 1 \leq y \leq 4\}$   
☐ B.  $\{1, 2, 3, 4\}$   
☐ C.  $\{-5, -4, -3, -2, -1, 0, 1\}$   
☐ D. All real numbers



10. Determine whether the following is the graph of a function.

Is this a graph of a function?

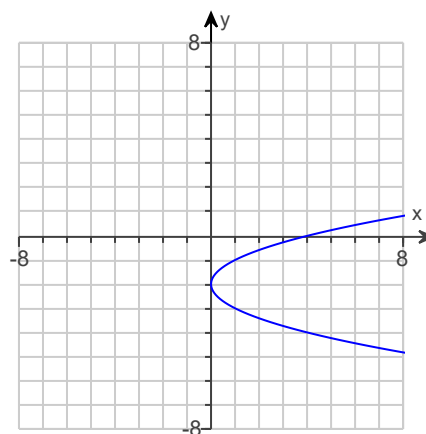
- ☐ Yes  
☐ No



11. Determine if the graph is a function.

Is this the graph of a function?

- ☐ No  
☐ Yes



12. Given the function  $G(v) = 6v + 7$ , find each of the following function values.

**a)**  $G(0)$    **b)**  $G(-2)$    **c)**  $G(6)$    **d)**  $G(a+1)$    **e)**  $G(a)+1$

**a)**  $G(0) =$  \_\_\_\_\_ (Simplify your answer.)

**b)**  $G(-2) =$  \_\_\_\_\_ (Simplify your answer.)

**c)**  $G(6) =$  \_\_\_\_\_ (Simplify your answer.)

**d)**  $G(a+1) =$  \_\_\_\_\_ (Simplify your answer. Do not factor.)

**e)**  $G(a)+1 =$  \_\_\_\_\_ (Simplify your answer. Do not factor.)

13. Find values of the function  $f(n) = 4n^2 + 6n$ .

(a)  $f(0)$  (b)  $f(-4)$  (c)  $f(4)$  (d)  $f(p)$  (e)  $f(2a)$  (f)  $f(4) - 9$

(a)  $f(0) =$  \_\_\_\_\_

(b)  $f(-4) =$  \_\_\_\_\_

(c)  $f(4) =$  \_\_\_\_\_

(d)  $f(p) =$  \_\_\_\_\_

(e)  $f(2a) =$  \_\_\_\_\_

(f)  $f(4) - 9 =$  \_\_\_\_\_

14. Find the function values for  $f(x) = \frac{x-8}{5x-7}$ .

(a)  $f(0)$  (b)  $f(6)$  (c)  $f(-4)$  (d)  $f(x+4)$

(a)  $f(0) =$  \_\_\_\_\_ (Type an integer or simplified fraction.)

(b)  $f(6) =$  \_\_\_\_\_ (Type an integer or simplified fraction.)

(c)  $f(-4) =$  \_\_\_\_\_ (Type an integer or simplified fraction.)

(d)  $f(x+4) =$  \_\_\_\_\_ (Simplify your answer.)

15. Fill in the missing values in the given table.

$f(x) = 9x - 8$	
$x$	$f(x)$
3	

$f(x) = 9x - 8$	
$x$	$f(x)$
3	_____ (Simplify your answer.)

16. Fill in the missing value in the table.

$f(x) = 6x - 2$	
$x$	$f(x)$
	-14

What is the missing value?

$x =$  \_\_\_\_\_  
(Simplify your answer. Type an integer or a fraction.)

17. If  $f(x) = 4 - x$ , for what input is the output 10?

What is the value of the input?

$x =$  \_\_\_\_\_

18. Solve and check.

$$80 - (5x + 15) = 5(x + 2) + x$$

The solution is  $x =$  \_\_\_\_\_. (Simplify your answer. Type an integer or a fraction.)

19. Solve.

$$\frac{5}{2}x + \frac{1}{4}x = \frac{7}{4} + x$$

The solution is  $x =$  \_\_\_\_\_. (Simplify your answer. Type an integer or a fraction.)

20. Determine whether the following statement refers to the domain or the range of a function.

The set of all first coordinates of ordered pairs giving the function.

Choose the correct answer below.

- ☐ A. Domain, because if the correspondence is listed as a set of ordered pairs, then the domain is the set of all first coordinates.
- ☐ B. Range, because if the correspondence is listed as a set of ordered pairs, then the range is the set of all ordered pairs.
- ☐ C. Domain, because if the correspondence is listed as a set of ordered pairs, then the domain is the set of all ordered pairs.
- ☐ D. Range, because if the correspondence is listed as a set of ordered pairs, then the range is the set of all first coordinates.

21. Determine whether the following statement refers to the domain or the range of a function.

The set of all x-values used in points on the graph of the function.

Choose the correct answer below.

- ☐ A. Domain, because if the function is described by a graph, then the domain is the set of all second coordinates of the points on the graph.
- ☐ B. Range, because if the function is described by a graph, then the range is the set of all first coordinates of the points on the graph.
- ☐ C. Domain, because if the function is described by a graph, then the domain is the set of all first coordinates of the points on the graph.
- ☐ D. Range, because if the function is described by a graph, then the range is the set of all second coordinates of the points on the graph.

22. Determine whether the following statement refers to the domain or the range of a function.

Restricted when a denominator is zero.

Choose the correct answer below.

- ☐ A. Domain, because for a rational function, the domain is restricted when a denominator is zero.
- ☐ B. Range, because for a rational function, the range is restricted when a denominator and numerator are both zero.
- ☐ C. Domain, because for a rational function, the domain is restricted when a denominator and numerator are both zero.
- ☐ D. Range, because for a rational function, the range is restricted when a denominator is zero.

23. Use the function given to the right to determine the equation that should be used to find the function value  $f(0)$ .

$$f(x) = \begin{cases} x - 5 & \text{if } x < -6 \\ 2x^2 & \text{if } -6 \leq x < -2 \\ |x| & \text{if } -2 \leq x < 10 \\ 5x + 1 & \text{if } x \geq 10 \end{cases}$$

Choose the correct answer below.

- ☐ A.  $f(x) = 2x^2$   
☐ B.  $f(x) = x - 5$   
☐ C.  $f(x) = 5x + 1$   
☐ D.  $f(x) = |x|$

24. Use the function given to the right to determine the equation that should be used to find the function value  $f(-9)$ .

$$f(x) = \begin{cases} x - 6 & \text{if } x < -5 \\ 2x^2 & \text{if } -5 \leq x < -2 \\ |x| & \text{if } -2 \leq x < 10 \\ 5x + 1 & \text{if } x \geq 10 \end{cases}$$

Choose the correct answer below.

- ☐ A.  $f(x) = 5x + 1$   
☐ B.  $f(x) = 2x^2$   
☐ C.  $f(x) = x - 6$   
☐ D.  $f(x) = |x|$

25. Use the function given to the right to determine the equation that should be used to find the function value  $f(7)$ .

$$f(x) = \begin{cases} x - 6 & \text{if } x < -5 \\ 3x^2 & \text{if } -5 \leq x < -1 \\ |x| & \text{if } -1 \leq x < 12 \\ 3x + 2 & \text{if } x \geq 12 \end{cases}$$

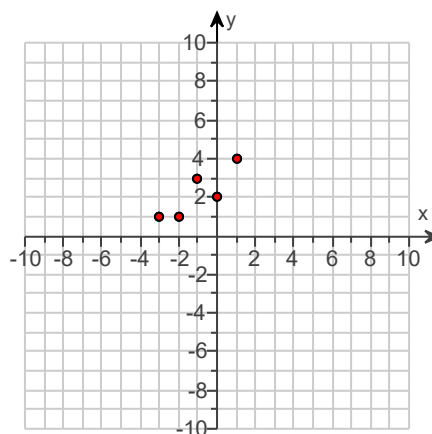
Choose the correct answer below.

- ☐ A.  $f(x) = |x|$   
☐ B.  $f(x) = x - 6$   
☐ C.  $f(x) = 3x^2$   
☐ D.  $f(x) = 3x + 2$

26. For the graph, determine the domain and the range.

The domain is {\_\_\_\_\_}.  
(Use a comma to separate answers.)

The range is {\_\_\_\_\_}.  
(Use a comma to separate answers.)



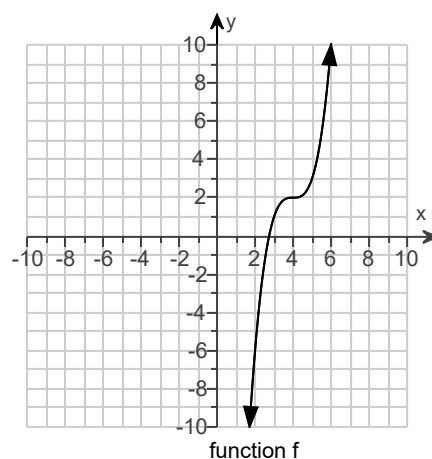
27. For the given graph of the function  $f$  find the domain and range of  $f$ .

Choose the domain of the function.

- ☐ A.  $\{x \mid x \neq 2\}$   
☐ B.  $\{x \mid 2 < x < 6\}$   
☐ C.  $\{x \mid x \text{ is a real number}\}$   
☐ D.  $\{x \mid x \neq 4\}$

Which of the following is the range of the function?

- ☐ A.  $\{y \mid y > 0\}$   
☐ B.  $\{y \mid y \text{ is a real number}\}$   
☐ C.  $\{y \mid y \neq 2\}$   
☐ D.  $\{y \mid y \neq 4\}$



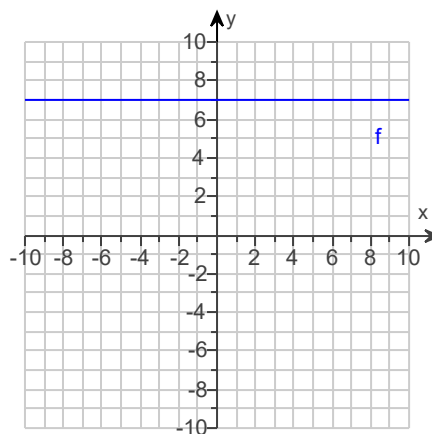
28. For the given graph of the function  $f$  find the domain and range of  $f$ .

Choose the domain of the function.

- ☐ A.  $\{x \mid x \neq 7\}$   
☐ B.  $\{x \mid x \geq 7\}$   
☐ C.  $\{x \mid x \text{ is a real number}\}$   
☐ D.  $\{x \mid x \neq 0\}$

Which of the following is the range of the function?

- ☐ A.  $\{y \mid y > 7\}$   
☐ B.  $\{y \mid y > -7\}$   
☐ C.  $\{y \mid y > 0\}$   
☐ D.  $\{y \mid y = 7\}$





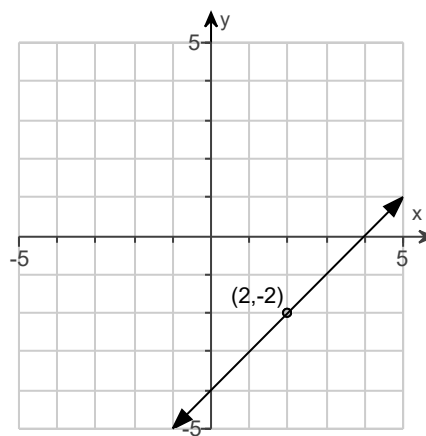
29. Find the domain and range for the function displayed to the right.

Which set is the correct domain?

- ☐ A.  $\{x \mid x \text{ is a real number}\}$   
☐ B.  $\{x \mid x \text{ is a real number, } x \neq 2\}$   
☐ C.  $\{x \mid x \text{ is a real number, } x \neq -2\}$

Which set is the correct range?

- ☐ A.  $\{y \mid y \text{ is a real number, } y \neq 2\}$   
☐ B.  $\{y \mid y \text{ is a real number, } y \neq -2\}$   
☐ C.  $\{y \mid y \text{ is a real number}\}$



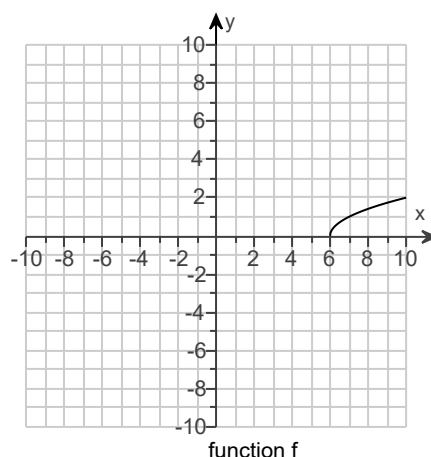
30. For the given graph of the function  $f$  find the domain and range of  $f$ .

Choose the domain of the function.

- ☐ A.  $\{x \mid x > 6\}$   
☐ B.  $\{x \mid x \geq 6\}$   
☐ C.  $\{x \mid x \geq -6\}$   
☐ D.  $\{x \mid x > 0\}$

Which of the following is the range of the function?

- ☐ A.  $\{y \mid y \geq 0\}$   
☐ B.  $\{y \mid y > 0\}$   
☐ C.  $\{y \mid y \geq -6\}$   
☐ D.  $\{y \mid y > 6\}$



31. Find the domain of the function.

$$f(x) = \frac{6}{x + 14}$$

What is the domain of  $f$ ?

- ☐ A.  $\{x \mid x \text{ is a real number and } x \neq -14 \text{ and } x \neq 0\}$   
☐ B.  $\{x \mid x \text{ is a real number and } x \neq 0\}$   
☐ C.  $\{x \mid x \text{ is a real number and } x \neq -14\}$   
☐ D.  $\{x \mid x \text{ is a real number}\}$

32. Find the domain of the function.

$$f(x) = \frac{5}{x^2 - 4}$$

What is the domain of  $f$ ?

- ☐ A.  $\{x \mid x \neq 2 \text{ and } x \neq -2\}$   
☐ B.  $\{x \mid x > 2\}$   
☐ C.  $\{x \mid x \neq 0\}$   
☐ D.  $\{x \mid x \text{ is a real number}\}$

33. Find the domain of the function  $f$ .

$$f(x) = \frac{7}{3x^3 - 27x^2 + 60x}$$

Choose the correct domain of  $f$ .

- ☐ A.  $\{x \mid x \neq 3 \text{ and } x \neq 4\}$   
☐ B.  $\{x \mid x \neq 0 \text{ and } x \neq 3\}$   
☐ C.  $\{x \mid x \neq 0 \text{ and } x \neq 5 \text{ and } x \neq 4\}$   
☐ D.  $\{x \mid x \neq 0\}$

34. For the indicated function, find the values  $f(-13)$ ,  $f(8)$ , and  $f(13)$ .

$$f(x) = \begin{cases} x^2 - 12, & \text{if } x < -12 \\ x^2, & \text{if } -12 \leq x \leq 12 \\ x^2 + 12, & \text{if } x > 12 \end{cases}$$

$f(-13) =$  \_\_\_\_\_  
(Simplify your answer.)

$f(8) =$  \_\_\_\_\_  
(Simplify your answer.)

$f(13) =$  \_\_\_\_\_  
(Simplify your answer.)

35. Use the order of operations to simplify the expression.

$$4(-4)^2 - 108 \div 6^2$$

$$4(-4)^2 - 108 \div 6^2 =$$

36. Simplify using the laws of exponents.

$$(x^4y)^6$$

$(x^4y)^6 =$  \_\_\_\_\_  
(Simplify your answer. Use positive exponents only.)

37. Classify the following statement as either true or false.

Linear functions are typically written in slope-intercept form.

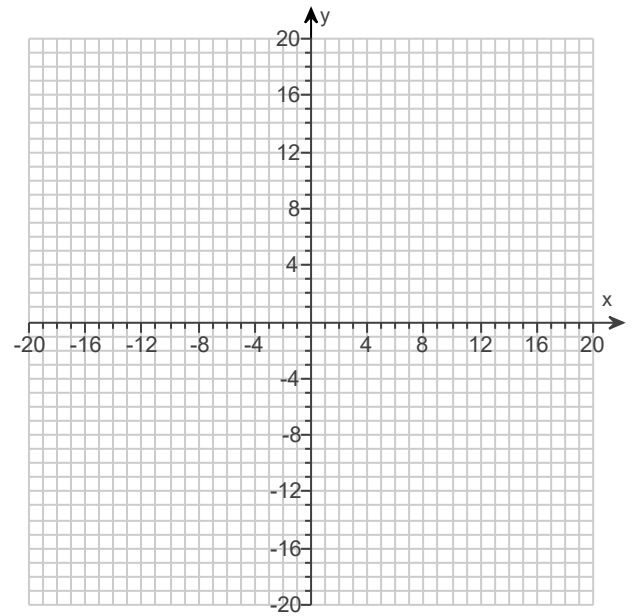
Choose the correct answer below.

- ☐ A. True, because a linear function is the correspondence between slope and intercept.  
☐ B. False, because linear functions are always written in point-slope form.  
☐ C. True, because the slope-intercept form emphasizes that y-values are determined by the x-values.  
☐ D. False, because linear functions are always written in standard form.

38. Graph the equation.

$$y = 2x + 3$$

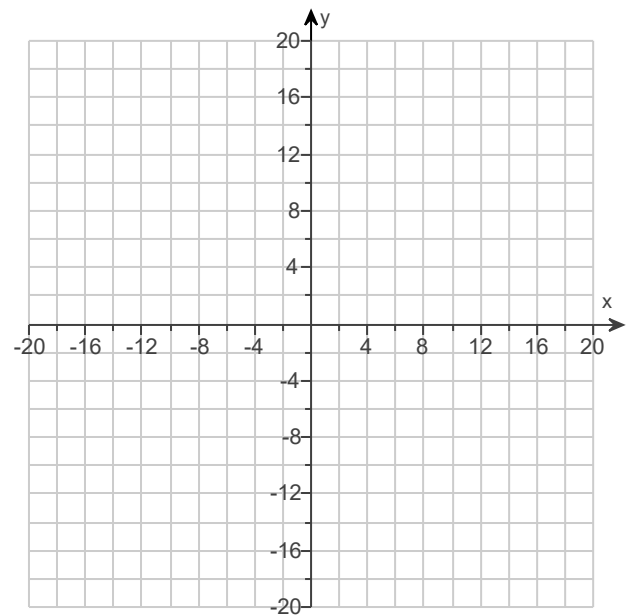
Use the graphing tool to graph the line.



39. Graph.

$$f(x) = -\frac{5}{4}x - 8$$

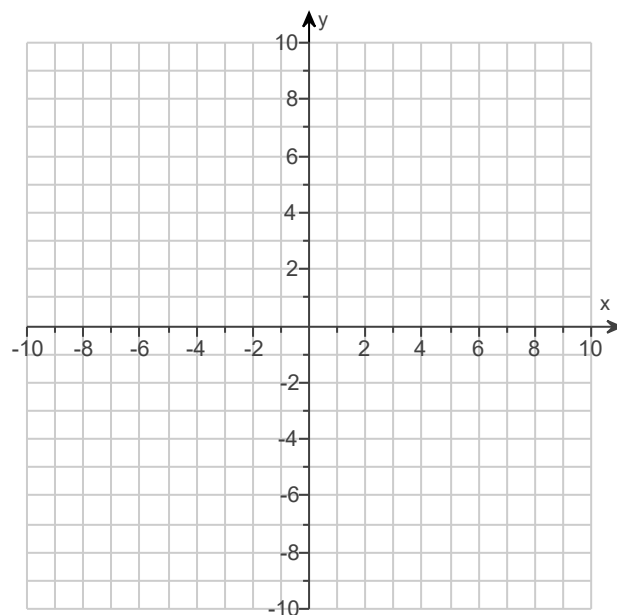
Use the graphing tool on the right to graph the equation.



40. Graph the equation.

$$y = 2$$

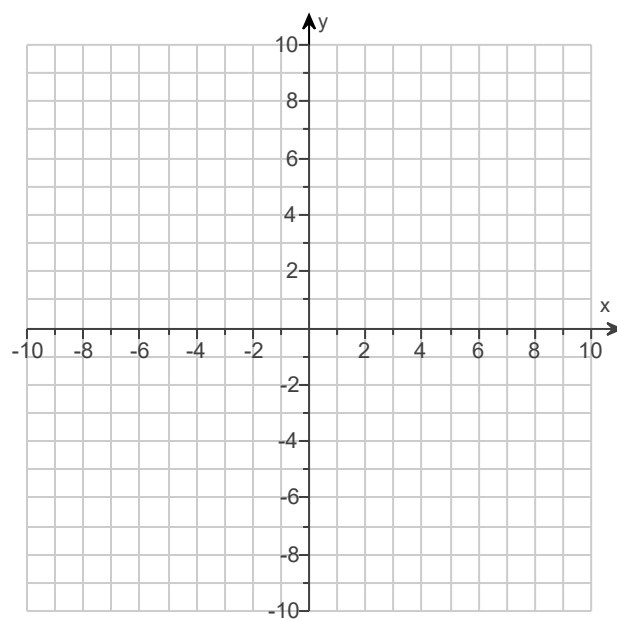
Use the graphing tool on the right to graph the equation.



41. Graph.

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

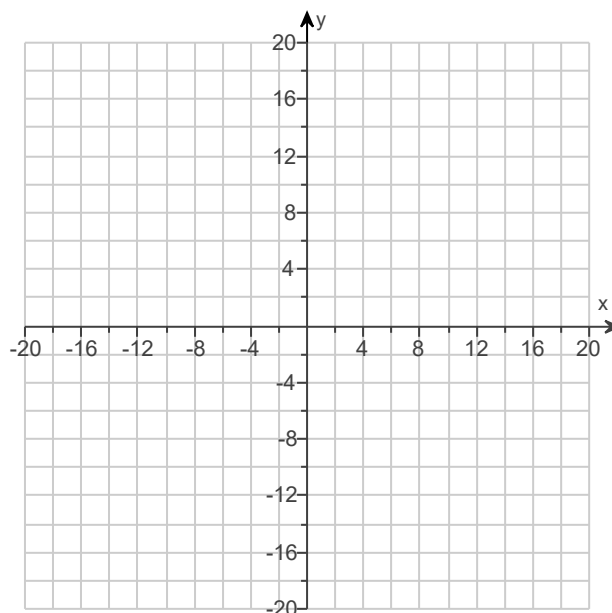
Use the graphing tool on the right to graph the equation.



42. Graph the equation using the slope and the y-intercept.

$$y = \frac{1}{8}x + 7$$

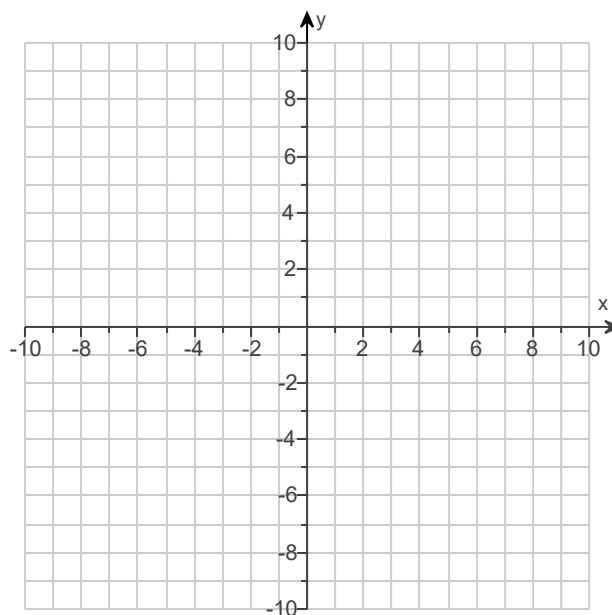
Use the graphing tool to graph the line. Use the slope and y-intercept when drawing the line.



43. Graph.

$$f(x) = -3$$

Use the graphing tool on the right to graph the equation.



44. Media Services charges \$40 for a phone and \$20/month for its economy plan. Find a linear model that determines the total cost,  $C(t)$ , of operating a Media Services phone for  $t$  months. Use the model to find the total cost for 11 months of service.

The model that determines the total cost is  $C(t) = \underline{\hspace{2cm}}t + \underline{\hspace{2cm}}$ .

The total cost for 11 months of service is \$                     .

45. Kara's Custom Tees experienced fixed costs of \$200 and variable costs of \$4 a shirt. Write an equation that can be used to determine the total expenses encountered by Kara's Custom Tees. Let  $x$  be the number of shirts, and let  $C(x)$  be the total cost of producing  $x$  shirts. Then, calculate the cost of producing 9 shirts.

An equation that can be used to determine the total cost of producing  $x$  shirts is  $C(x) = \underline{\hspace{2cm}}$ .

The cost of producing 9 shirts is \$                     .

46. Classify the function as a linear function, an absolute value function, a quadratic function, another polynomial function, or a rational function, and determine the domain of the function.

$$h(x) = \frac{5}{6}x + 5$$

Determine the type of the function.

- ☐ A. Absolute-value function      ☐ B. Rational function  
☐ C. Linear function      ☐ D. Quadratic function  
☐ E. A general polynomial function

What is the domain?

- ☐ A.  $\{x \mid x > 0\}$   
☐ B.  $\{x \mid x \text{ is a real number}\}$   
☐ C.  $\{x \mid -10 \leq x \leq 10\}$   
☐ D.  $\{x \mid x < 0\}$

47. Find the domain of the function.

$$p(x) = x^2 - 2x + 8$$

What is the domain of p?

- ☐ A.  $\{x \mid x \text{ is a real number}\}$   
☐ B.  $\{x \mid x \text{ is a real number and } x \neq 8\}$   
☐ C.  $\{x \mid x \text{ is a real number and } x \neq 0\}$   
☐ D.  $\{x \mid x \text{ is a real number and } x > 0\}$

48. Classify the function as a linear function, an absolute value function, a quadratic function, another polynomial function, or a rational function, and determine the domain of the function.

$$f(x) = \frac{1}{7x + 4}$$

Determine the type of the function.

- ☐ A. Absolute-value function      ☐ B. Rational function  
☐ C. A general polynomial function      ☐ D. Linear function  
☐ E. Quadratic function

What is the domain?

- ☐ A.  $\left\{x \mid x \text{ is a real number and } x \neq -\frac{4}{7}\right\}$       ☐ B.  $\{x \mid x \text{ is a real number and } x \neq 1\}$   
☐ C.  $\left\{x \mid x \geq -\frac{4}{7}\right\}$       ☐ D.  $\{x \mid x \text{ is a real number and } x \neq 0\}$

49. Classify the function,  $f(n) = \frac{7n - 6}{n^2 + 3n + 2}$ , as a linear function, an absolute value function, a quadratic function, a polynomial function, or a rational function, and then determine the domain of the function.

Determine the type of the function. Choose the correct type below.

- ☐ Linear function  
☐ Quadratic function  
☐ Polynomial function  
☐ Rational function  
☐ Absolute value function

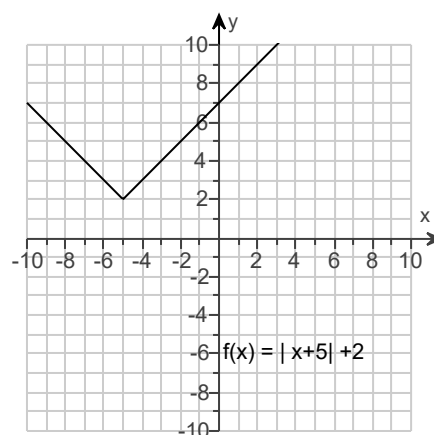
What is the domain of  $f$ ? Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- ☐ A.  $\{n \mid n \text{ is a real number and } n \neq \underline{\hspace{2cm}}\}$ .  
 (Type an integer or a fraction. Use a comma to separate answers as needed.)  
☐ B. The domain is the set of all real numbers.

50. Given the graph of the function, determine the range of  $f$ .

What is the range of the function?

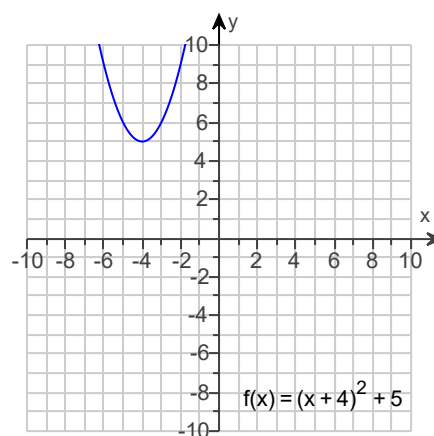
- ☐ A. All real numbers  
☐ B.  $\{y \mid y > 2\}$   
☐ C.  $\{y \mid y \geq 2\}$



51. Given the graph of the function, determine the range of  $f$ .

What is the range of the function?

- ☐ A.  $\{y \mid y \geq 5\}$   
☐ B.  $\{y \mid y > 5\}$   
☐ C. All real numbers



52. Sketch the graph of the linear function, then give its domain and range.

$$y = 3x + 2$$

What is the domain?

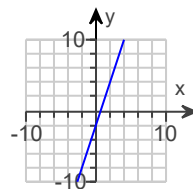
- ☐ A.  $\{x \mid x < 0\}$   
☐ B.  $\{x \mid x > 0\}$   
☐ C.  $\{x \mid x \text{ is a real number}\}$   
☐ D.  $\{x \mid -10 \leq x \leq 10\}$

What is the range?

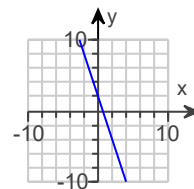
- ☐ A.  $\{y \mid y \leq 0\}$   
☐ B.  $\{y \mid y \text{ is a real number}\}$   
☐ C.  $\{y \mid y \geq 0\}$   
☐ D.  $\{y \mid -8 \leq y \leq 12\}$

Choose the correct graph.

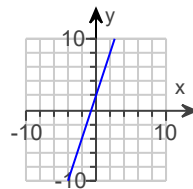
☐ A.



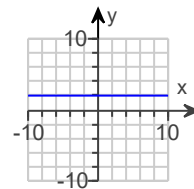
☐ B.



☐ C.



☐ D.



53. Graph the following function. Give the domain and the range.

$$f(x) = -1$$

Which is the correct graph?

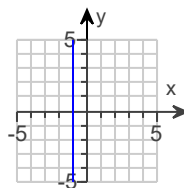
What is the domain of the function? Select the correct choice below and fill in any answer boxes within your choice.

- ☐ A. \_\_\_\_\_ (Type an inequality.)  
☐ B. The answer is all real numbers.

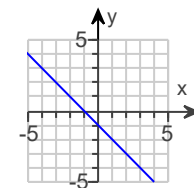
What is the range?

{\_\_\_\_\_}

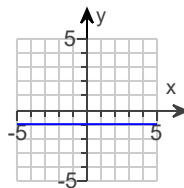
☐ A.



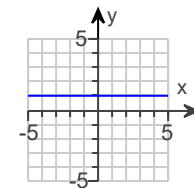
☐ B.



☐ C.



☐ D.



54. Graph the function and determine its domain and range.

$$r(x) = |x| - 3$$

Choose the domain of the function.

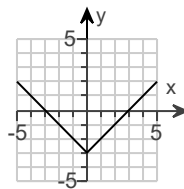
- ☐ A.  $\{x \mid x \geq 3\}$   
☐ B.  $\{x \mid x \text{ is a real number}\}$   
☐ C.  $\{x \mid x \neq 3\}$   
☐ D.  $\{x \mid x \neq 0\}$

Which of the following is the range of the function?

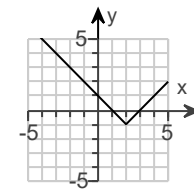
- ☐ A.  $\{y \mid y \geq -3\}$       ☐ B.  $\{y \mid y > -3\}$   
☐ C.  $\{y \mid y > 3\}$       ☐ D.  $\{y \mid y > 0\}$

Choose the correct graph of the function.

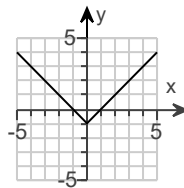
☐ A.



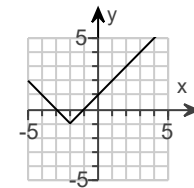
☐ B.



☐ C.



☐ D.





55. Graph the function and determine its domain and range.

$$h(x) = x^2 + 4$$

Choose the domain of the function.

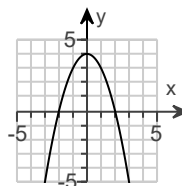
- ☐ A.  $\{x \mid x \neq 0\}$   
☐ B.  $\{x \mid x \geq 4\}$   
☐ C.  $\{x \mid x \neq 4\}$   
☐ D.  $\{x \mid x \text{ is a real number}\}$

Which of the following is the range of the function?

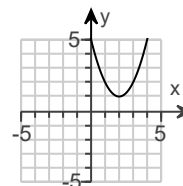
- ☐ A.  $\{y \mid y > 4\}$       ☐ B.  $\{y \mid y \geq 4\}$   
☐ C.  $\{y \mid y > 0\}$       ☐ D.  $\{y \mid y < 4\}$

Choose the correct graph of the function.

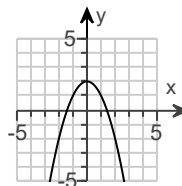
☐ A.



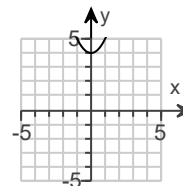
☐ B.



☐ C.



☐ D.



56. Factor completely. Remember to look first for a common factor. Check by multiplying. If the polynomial is prime, state this.

$$2b^3 - 90b^2 - 392b$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- ☐ A.  $2b^3 - 90b^2 - 392b =$  \_\_\_\_\_ (Factor completely.)  
☐ B. The polynomial is prime.

57. Fill in the blank.

If  $f$  and  $g$  are functions, then  $(f + g)(x)$  is the (1) \_\_\_\_\_ of the functions.

- (1) ☐ difference  
☐ sum

58. Fill in the blank.

One way to compute  $(f - g)(2)$  is to simplify  $f(x) - g(x)$  and then (1) \_\_\_\_\_ the result for  $x = 2$ .

- (1) ☐ substitute  
☐ evaluate

59. Fill in the blank.

The domain of  $\frac{f}{g}$  is the set of all values common to the domains of  $f$  and  $g$ , (1) \_\_\_\_\_ any values for which  $g(x)$  is 0.

- (1) ☐ including  
☐ excluding

60. Let  $f(x) = -14x + 15$  and  $g(x) = x^2 + 13$ .

Find  $f(1) + g(1)$ .

$f(1) + g(1) =$  \_\_\_\_\_

61. Let  $f(x) = -19x + 8$  and  $g(x) = x^2 + 8$ .

Find  $f(0) - g(0)$ .

$f(0) - g(0) =$  \_\_\_\_\_

62. Let  $f(x) = -6x + 9$  and  $g(x) = x^2 + 3$ .

Find  $f(5) \cdot g(5)$ .

$f(5) \cdot g(5) =$  \_\_\_\_\_

63. Let  $f(x) = -3x + 11$  and  $g(x) = x^2 + 7$ .

Find  $f(-7)/g(-7)$ .

$f(-7)/g(-7) =$  \_\_\_\_\_  
(Type a fraction. Simplify your answer.)

64. Let  $f(x) = -5x + 3$  and  $g(x) = x^2 + 2$ .

Find  $(f + g)(x)$ .

$(f + g)(x) =$  \_\_\_\_\_  
(Simplify your answer.)

65. Let  $f(x) = -3x + 4$  and  $g(x) = x^2 - 4$ . Find the difference  $(g - f)(x)$ .

$(g - f)(x) =$  \_\_\_\_\_  
(Simplify your answer.)

66. Let  $F(x) = x^2 - 5$  and  $G(x) = 16 - x$ .

Find  $(F \cdot G)(n)$ .

$(F \cdot G)(n) =$  \_\_\_\_\_  
(Type the polynomial in descending order.)

67. Let  $F(x) = x^2 - 1$  and  $G(x) = 5 - x$ .

Find  $(F/G)(x)$ .

$(F/G)(x) =$  \_\_\_\_\_

68. Find  $(f + g)(x)$  if  $f(x) = \frac{x - 1}{x^2 - x - 42}$  and  $g(x) = \frac{x + 6}{x^2 - 49}$ .

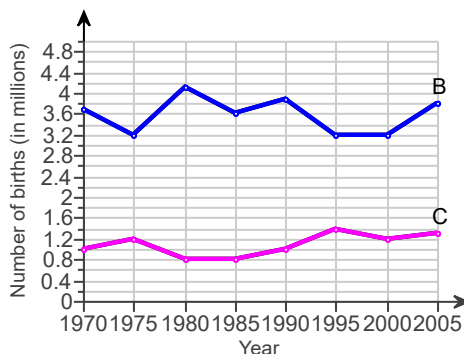
$(f + g)(x) =$  \_\_\_\_\_  
(Simplify your answer. Type your answer in factored form. Use integers or fractions for any numbers in the expression. Use positive exponents only.)

69. Find  $\left(\frac{f}{g}\right)(x)$  if  $f(x) = \frac{x-2}{x^2-x-6}$  and  $g(x) = \frac{x+2}{x^2-9}$ .

$$\left(\frac{f}{g}\right)(x) = \underline{\hspace{2cm}}$$

(Simplify your answer. Type your answer in factored form. Use integers or fractions for any numbers in the expression. Use positive exponents only.)

70. The graph shows the number of births in some country, in millions, from 1970-2005. Here  $C(t)$  represents the number of Caesarean section births,  $B(t)$  the number of non-Caesarean section births, and  $N(t)$  the total number of births in year  $t$ . Use estimates of  $B(2005)$  and  $C(2005)$  to estimate  $N(2005)$ . Assume the values are to the nearest tenth.



$N(2005) = \underline{\hspace{2cm}}$  (Type an integer or a decimal.)

71. For the pair of functions  $f$  and  $g$ , determine the domain of the sum, difference and product of the two functions.

$$f(x) = x^2, \quad g(x) = 7x - 7$$

What is the domain of the sum of  $f$  and  $g$ ? Select the correct choice below and fill in any answer boxes within your choice.

- ☐ A.  $\{x \mid x \text{ is a real number and } \underline{\hspace{2cm}}\}$   
(Type an inequality. Use integers or fractions for any numbers in the expression. Use a comma to separate answers as needed.)
- ☐ B.  $\{x \mid x \text{ is a real number}\}$

What is the domain of the difference of  $f$  and  $g$ ? Select the correct choice below and fill in any answer boxes within your choice.

- ☐ A.  $\{x \mid x \text{ is a real number and } \underline{\hspace{2cm}}\}$   
(Type an inequality. Use integers or fractions for any numbers in the expression. Use a comma to separate answers as needed.)
- ☐ B.  $\{x \mid x \text{ is a real number}\}$

What is the domain of the product of  $f$  and  $g$ ? Select the correct choice below and fill in any answer boxes within your choice.

- ☐ A.  $\{x \mid x \text{ is a real number and } \underline{\hspace{2cm}}\}$   
(Type an inequality. Use integers or fractions for any numbers in the expression. Use a comma to separate answers as needed.)
- ☐ B.  $\{x \mid x \text{ is a real number}\}$

72. For the pair of functions  $f$  and  $g$ , determine the domain of the sum, difference and product of the two functions.

$$f(x) = \frac{1}{x-9}, g(x) = 9x^3$$

---

What is the domain of the sum of  $f$  and  $g$ ? Select the correct choice below and fill in any answer boxes within your choice.

- ☐ A.  $\{x \mid x \text{ is a real number and } \underline{\hspace{2cm}}\}$   
(Type an inequality. Use integers or fractions for any numbers in the expression. Use a comma to separate answers as needed.)
- ☐ B.  $\{x \mid x \text{ is a real number}\}$

What is the domain of the difference of  $f$  and  $g$ ? Select the correct choice below and fill in any answer boxes within your choice.

- ☐ A.  $\{x \mid x \text{ is a real number and } \underline{\hspace{2cm}}\}$   
(Type an inequality. Use integers or fractions for any numbers in the expression. Use a comma to separate answers as needed.)
- ☐ B.  $\{x \mid x \text{ is a real number}\}$

What is the domain of the product of  $f$  and  $g$ ? Select the correct choice below and fill in any answer boxes within your choice.

- ☐ A.  $\{x \mid x \text{ is a real number and } \underline{\hspace{2cm}}\}$   
(Type an inequality. Use integers or fractions for any numbers in the expression. Use a comma to separate answers as needed.)
- ☐ B.  $\{x \mid x \text{ is a real number}\}$
-

73. For the pair of functions  $f$  and  $g$ , determine the domain of the sum, difference and product of the two functions.

$$f(x) = \frac{3}{x-9}, g(x) = \frac{8}{4-x}$$

What is the domain of the sum of  $f$  and  $g$ ? Select the correct choice below and fill in any answer boxes within your choice.

- ☐ A.  $\{x \mid x \text{ is a real number and } \underline{\hspace{2cm}}\}$   
(Type an inequality. Use integers or fractions for any numbers in the expression. Use a comma to separate answers as needed.)
- ☐ B.  $\{x \mid x \text{ is a real number}\}$

What is the domain of the difference of  $f$  and  $g$ ? Select the correct choice below and fill in any answer boxes within your choice.

- ☐ A.  $\{x \mid x \text{ is a real number and } \underline{\hspace{2cm}}\}$   
(Type an inequality. Use integers or fractions for any numbers in the expression. Use a comma to separate answers as needed.)
- ☐ B.  $\{x \mid x \text{ is a real number}\}$

What is the domain of the product of  $f$  and  $g$ ? Select the correct choice below and fill in any answer boxes within your choice.

- ☐ A.  $\{x \mid x \text{ is a real number and } \underline{\hspace{2cm}}\}$   
(Type an inequality. Use integers or fractions for any numbers in the expression. Use a comma to separate answers as needed.)
- ☐ B.  $\{x \mid x \text{ is a real number}\}$

74. For the pair of functions  $f$  and  $g$ , determine the domain of  $f/g$ .

$$f(x) = x^6, g(x) = x - 5$$

What is the domain? Select the correct choice below and fill in any answer boxes within your choice.

- ☐ A.  $\{x \mid x \text{ is a real number and } \underline{\hspace{2cm}}\}$   
(Type an inequality. Use integers or fractions for any numbers in the expression. Use a comma to separate answers as needed.)
- ☐ B.  $\{x \mid x \text{ is a real number}\}$

75. For the pair of functions  $f$  and  $g$ , determine the domain of  $f/g$ .

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

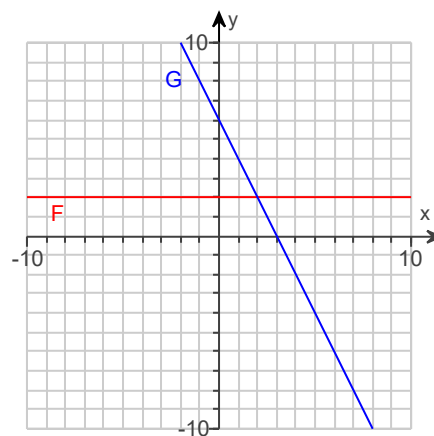
What is the domain? Select the correct choice below and fill in any answer boxes within your choice.

- ☐ A.  $\{x \mid x \text{ is a real number and } \underline{\hspace{2cm}}\}$   
(Type an inequality. Use integers or fractions for any numbers in the expression. Use a comma to separate answers as needed.)
- ☐ B.  $\{x \mid x \text{ is a real number}\}$

76. Consider the functions  $F$  and  $G$  in the graph.

Find  $(F + G)(4)$ .

$(F + G)(4) =$  \_\_\_\_\_



77. Consider the graphs on the right of the functions  $F$  and  $G$ .

Find the domain of  $F$ , the domain of  $G$ , the domain of  $F + G$  and the domain of  $F/G$ .

What is the domain of  $F$ ?

- ☐ A.  $\{x \mid 6 \leq x \leq 11\}$   
☐ B.  $\{x \mid 0 \leq x \leq 11\}$   
☐ C.  $\{x \mid 0 \leq x \leq 9\}$   
☐ D.  $\{x \mid 6 \leq x \leq 9\}$

What is the domain of  $G$ ?

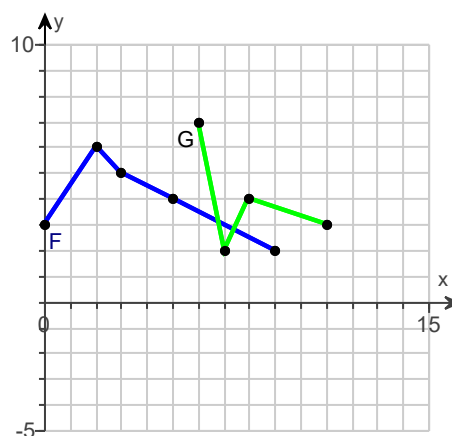
- ☐ A.  $\{x \mid 6 \leq x \leq 11\}$   
☐ B.  $\{x \mid 0 \leq x \leq 9\}$   
☐ C.  $\{x \mid 0 \leq x \leq 11\}$   
☐ D.  $\{x \mid 6 \leq x \leq 9\}$

What is the domain of  $F + G$ ?

- ☐ A.  $\{x \mid 6 \leq x \leq 11 \text{ and } x \neq 9\}$   
☐ B.  $\{x \mid 0 \leq x \leq 9 \text{ and } x \neq 6\}$   
☐ C.  $\{x \mid 0 \leq x \leq 9\}$   
☐ D.  $\{x \mid 6 \leq x \leq 9\}$

What is the domain of  $F/G$ ?

- ☐ A.  $\{x \mid 6 \leq x \leq 11 \text{ and } x \neq 9\}$   
☐ B.  $\{x \mid 6 \leq x \leq 9\}$   
☐ C.  $\{x \mid 0 \leq x \leq 9 \text{ and } x \neq 6\}$   
☐ D.  $\{x \mid 0 \leq x \leq 9\}$



$F = \text{Blue}$

$G = \text{Green}$

78. A rectangle's width is one-seventh its length, and its perimeter is 96 m. Find the dimensions of the rectangle.

The length is \_\_\_\_\_ m and the width is \_\_\_\_\_ m.

79. Fill in the blank.

To clear fractions, multiply both sides of an equation by the (1) \_\_\_\_\_ of the denominators.

- (1) ☐ sum  
☐ LCM  
☐ greatest common factor

80. Fill in the blank.

If  $y = kx$ , then  $y$  varies (1) \_\_\_\_\_ with  $x$ .

- (1) ☐ directly  
☐ combined variation  
☐ jointly  
☐ inversely

81. Solve  $\frac{1}{p} + \frac{1}{r} = 1$  for  $p$ .

The solution is  $p =$  \_\_\_\_\_.

82. Solve for  $t$ .

$$B = \frac{c}{1-t}$$

$t =$  \_\_\_\_\_

83. The formula  $\frac{1}{a} = \frac{1}{s} + \frac{1}{r}$  gives the total time  $a$  for work to be done by two workers whose individual times are  $s$  and  $r$ .  
Solve for  $a$ .

$a =$  \_\_\_\_\_

84. Find the variation constant and an equation of variation where  $y$  varies directly as  $x$  and  $y = 32$  when  $x = 8$ .

The variation constant is  $k =$  \_\_\_\_\_.

The equation of variation is  $y =$  \_\_\_\_\_.

85. Find the variation constant and an equation of variation where  $y$  varies inversely as  $x$  and  $y = 1$  when  $x = 4$ .

The variation constant is \_\_\_\_\_.

The equation of variation is  $y =$  \_\_\_\_\_.

86. Hooke's Law. The distance  $d$  when a spring is stretched by a hanging object varies directly as the weight  $w$  of the object. If the distance is 32 cm when the weight is 3 kg, what is the distance when the weight is 5 kg?

The distance is \_\_\_\_\_ cm.

(Type an integer or decimal rounded to three decimal places as needed.)