1. Enter the correct answers that completes the sentence below.

   The graph of the line $y - 5 = 5(x - 3)$ has a slope of _____ and passes through the point (3, _____).

---

2. Enter the correct answers that complete the sentence below.

   The graph of the line $y = -3x + 2$ has a slope of _____ and a y-intercept of _____.
   (Type an ordered pair.)

---

3. Enter the correct answer that completes the sentence below.

   The vertical line through the point $(-5, 8)$ has the equation (1) _____ $= -5$.

   (1) ○ x
   ○ z
   ○ y

---

4. Enter the correct answer that completes the sentence below.

   The horizontal line through the point $(-2, 6)$ has the equation (1) _____ $= 6$.

   (1) ○ x
   ○ y
   ○ z

---

5. Enter the correct answer that completes the sentence below.

   Any line parallel to the graph of $2x + 5y = 3$ must have the slope _____.
   (Type an integer or a simplified fraction.)

---

6. Enter the correct answer that completes the sentence below.

   Any line perpendicular to the graph of $5x + 3y = 2$ must have the slope _____.
   (Type an integer or a simplified fraction.)

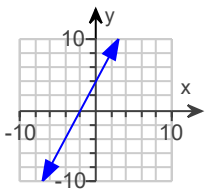
---

7. Identify the graph of the following equation.

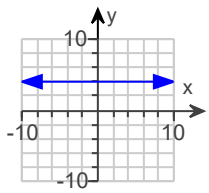
   $$y = \frac{1}{2}x + 4$$

   Choose the correct graph below.

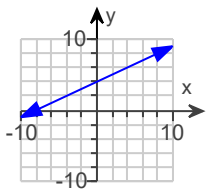
   ○ **A.**



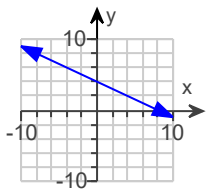
   ○ **B.**



   ○ **C.**



   ○ **D.**



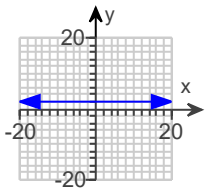
---

8. Identify the graph of the following equation.

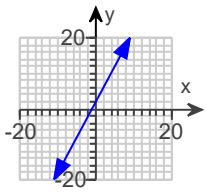
$4x + 2y = 8$

Choose the correct graph below.

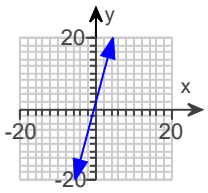
A.



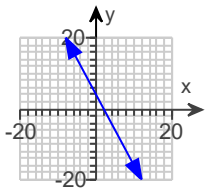
B.



C.



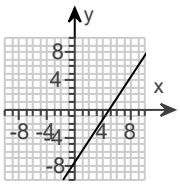
D.



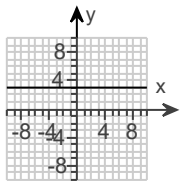
9. Match the following equation to the correct graph.

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

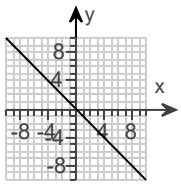
A.



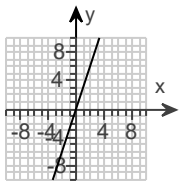
B.



C.



D.

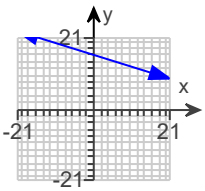


10. Identify the graph of the following equation.

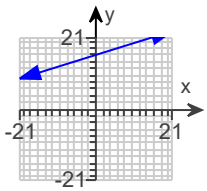
$y = 16$

Choose the correct graph below.

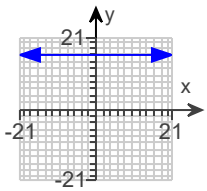
A.



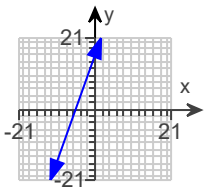
B.



C.



D.



11. Write an equation of the line through $(-4, -6)$ having slope $\frac{20}{13}$. Give the answer in standard form.

The equation of the line is _____ x − _____ y = _____.

12. Write an equation in slope-intercept form for the line described.

x-intercept $(-7,0)$, y-intercept $(0,5)$

The equation of the line is y = _____.
(Simplify your answer. Type your answer in slope-intercept form. Use integers or fractions for any numbers in the equation.)

13. Write an equation for the vertical line through $(-2,7)$. Give the answer in slope-intercept form (if possible).

The equation of the vertical line through $(-2,7)$ is _____. (Type an equation.)

14. Write an equation for the horizontal line that passes through (13,14). Give an answer in slope-intercept form (if possible).

The equation is _____.

15. Find the slope and y-intercept of the given line, and graph it.

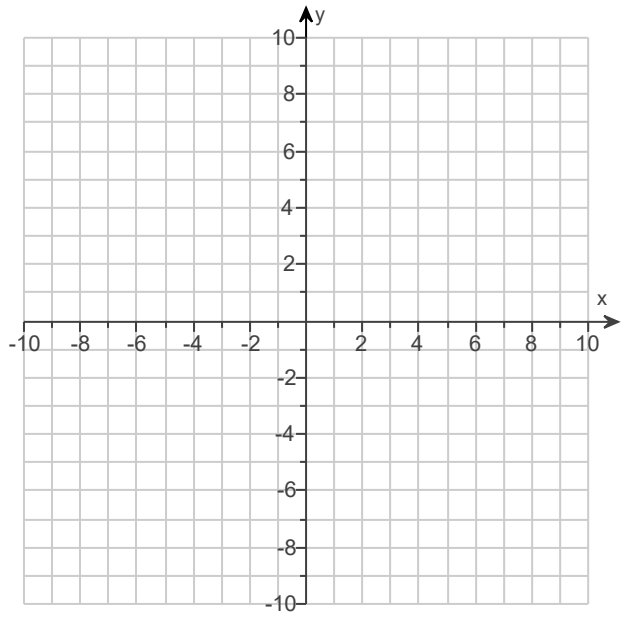
$2y = -3x$

The slope of the line is _____.
(Simplify your answer. Type an integer or a fraction.)

What is the y-intercept?

_____
(Type an ordered pair.)

Use the graphing tool to graph the line.

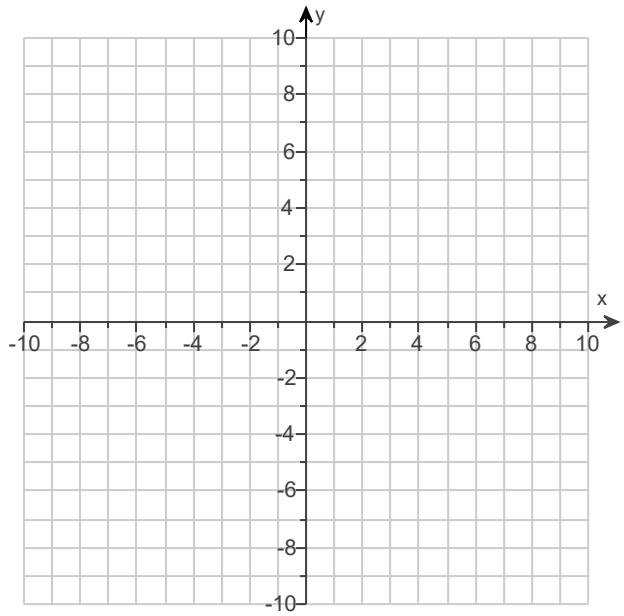


16. Find the slope and y-intercept of the line with equation $x + 8y = -8$. Then graph the line.

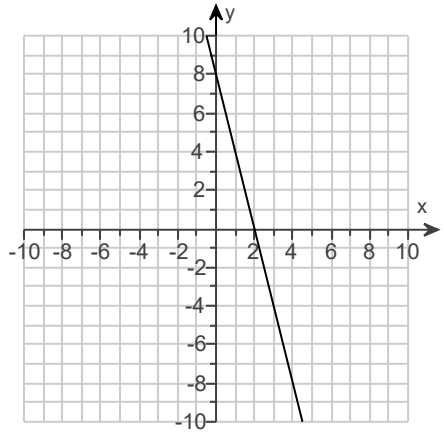
The slope is _____.
(Type an integer or a simplified fraction.)

The y-intercept is _____.
(Type an ordered pair.)

Graph the line.



17. The graph of a linear function f is shown. **a.** Identify the slope, y-intercept, and x-intercept.
b. Write the equation that defines f.



The slope is _____.
(Type an integer or a simplified fraction.)

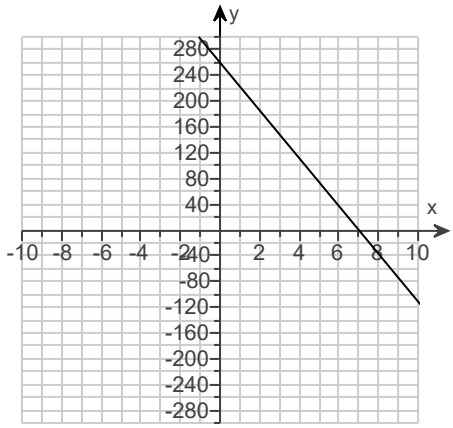
The y-intercept is _____.
(Type an ordered pair.)

The x-intercept is _____.
(Type an ordered pair.)

Write equation that defines f.

f(x) = _____

18. The graph of a linear function f is shown. **a.** Identify the slope, y-intercept, and x-intercept.
b. Write the equation that defines f.



a. The slope is _____.
(Type an integer or a simplified fraction.)
The y-intercept is _____.
(Type an ordered pair. Type an integer or a simplified fraction.)
The x-intercept is _____.
(Type an ordered pair. Type an integer or a simplified fraction.)

b. Write an equation that defines f.

f(x) = _____
(Simplify your answer. Use integers or fractions for any numbers in the expression.)

19. Write an equation **(a)** in slope-intercept form and **(b)** in standard form for the line passing through $(-3,6)$ and parallel to $x + 2y = 5$.

a) The equation of the line in slope-intercept form is _____.
(Type your answer in slope-intercept form. Use integers or fractions for any numbers in the equation.)

b) The equation of the line in standard form is _____.
(Type your answer in standard form.)

20. Write an equation **(a)** in slope-intercept form and **(b)** in standard form for the line passing through $(1,7)$ and perpendicular to $3x + 5y = 1$.

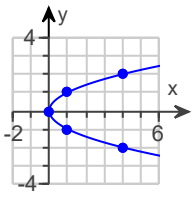
a) The equation of the line in slope-intercept form is _____.
(Type your answer in slope-intercept form. Use integers or fractions for any numbers in the equation.)

b) The equation of the line in standard form is _____.
(Type your answer in standard form.)

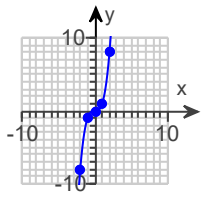
21. Which one is the graph of $f(x) = x^2$? What is its domain?

Which one is the graph of $f(x) = x^2$? Choose the correct graph below.

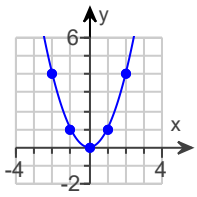
A.



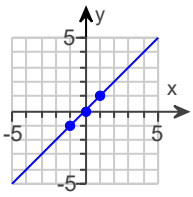
B.



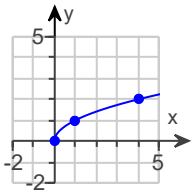
C.



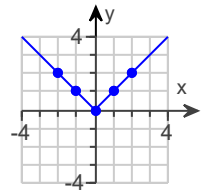
D.



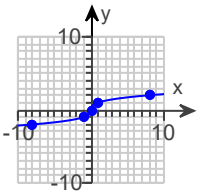
E.



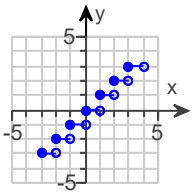
F.



G.



H.



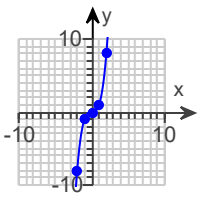
What is its domain?

_____ (Type your answer in interval notation.)

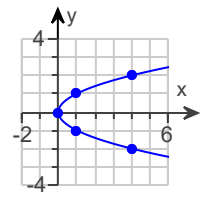
22. Which one is the graph of $f(x) = |x|$? On what open interval is it increasing?

Which one is the graph of $f(x) = |x|$? Choose the correct graph below.

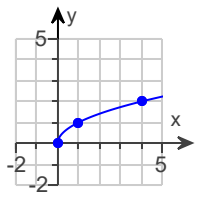
A.



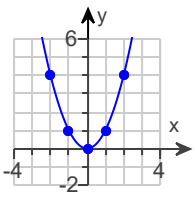
B.



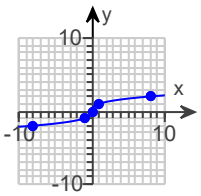
C.



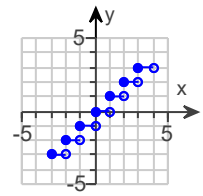
D.



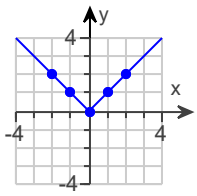
E.



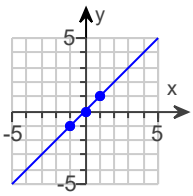
F.



G.



H.



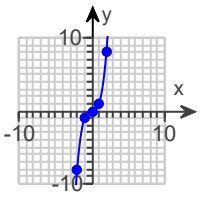
On what open interval is it increasing?

_____ (Type your answer in interval notation.)

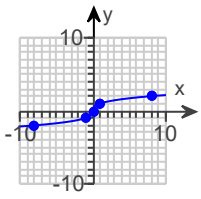
23. Which one is the graph of $f(x) = x^3$? What is its range?

Which one is the graph of $?(x) = x^3$? Choose the correct graph below.

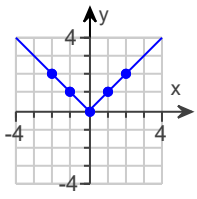
A.



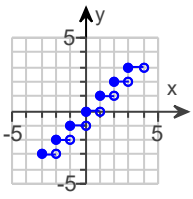
B.



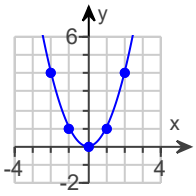
C.



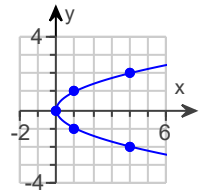
D.



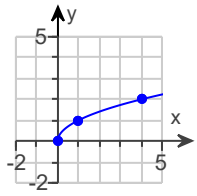
E.



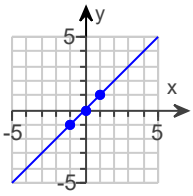
F.



G.



H.



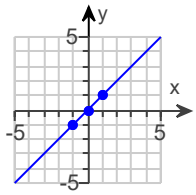
What is its range?

_____ (Type your answer in interval notation.)

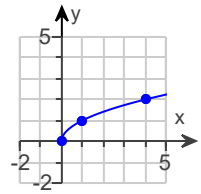
24. Which one is not the graph of a function? What is its equation?

Which one is not the graph of a function? Choose the correct graph below.

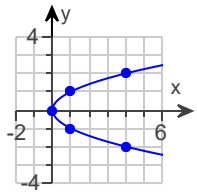
A.



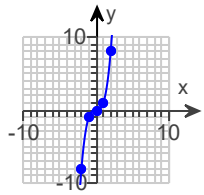
B.



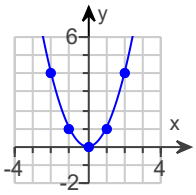
C.



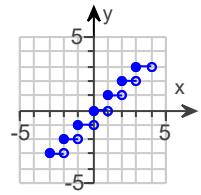
D.



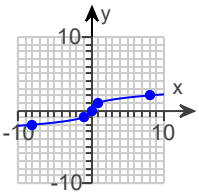
E.



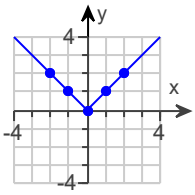
F.



G.



H.



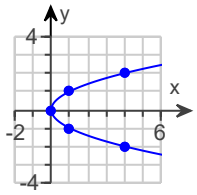
What is its equation?

_____ (Type an equation using x and y as the variables.)

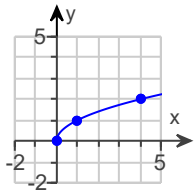
25. Which one is the identity function? What is its equation?

Which one is the identity function? Choose the correct graph below.

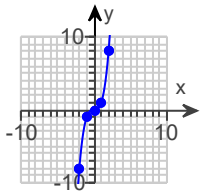
A.



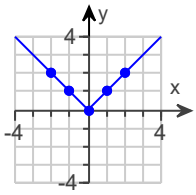
B.



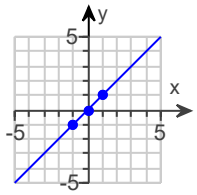
C.



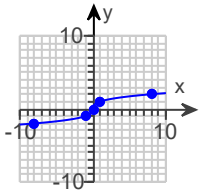
D.



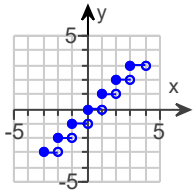
E.



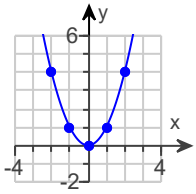
F.



G.



H.



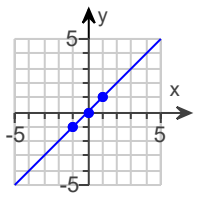
What is its equation?

_____ (Type an equation.)

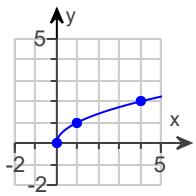
26. Which one is the graph of f(x) = ⟦x⟧? What is the function value when x = 0.2?

Which one is the graph of f(x) = ⟦x⟧? Choose the correct graph below.

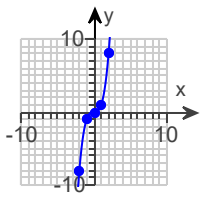
A.



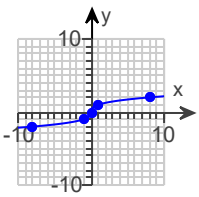
B.



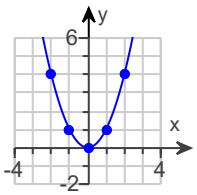
C.



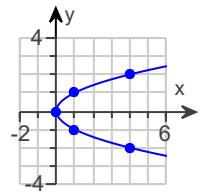
D.



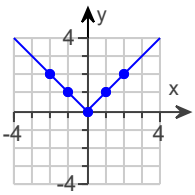
E.



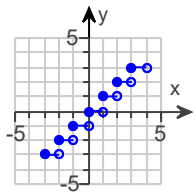
F.



G.



H.



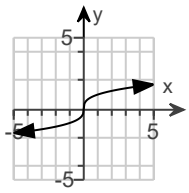
What is the function value when x = 0.2?

_____

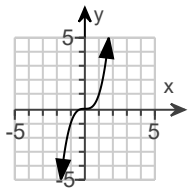
27. Which graph is the graph of $f(x) = \sqrt[3]{x}$? Is there any interval over which the function is decreasing?

Which of the following is the graph of $f(x) = \sqrt[3]{x}$? Choose the correct graph below.

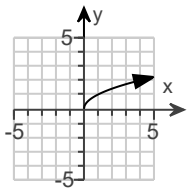
A.



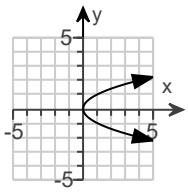
B.



C.



D.



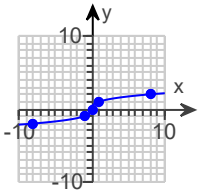
Is there any interval over which the function is decreasing?

- No
- Yes

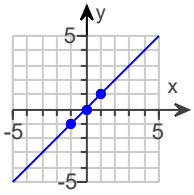
28. Which one is the graph of $f(x) = \sqrt{x}$? What is its domain?

Which one is the graph of $f(x) = \sqrt{x}$? Choose the correct graph below.

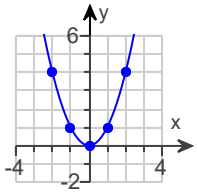
A.



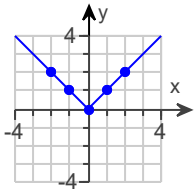
B.



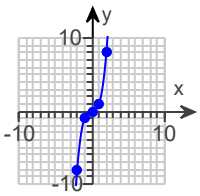
C.



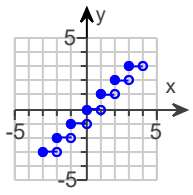
D.



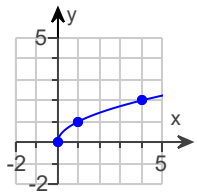
E.



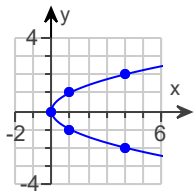
F.



G.



H.



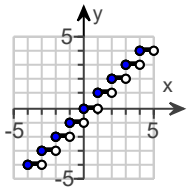
What is its domain?

_____ (Type your answer in interval notation.)

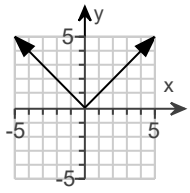
29. Which graph is discontinuous at many points? What is the range?

Which of the following graphs is discontinuous at many points? Choose the correct graph below.

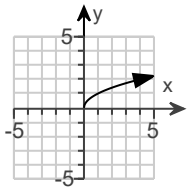
A.



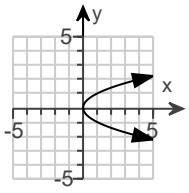
B.



C.



D.



Choose the correct range below.

A. The range is $(-\infty,\infty)$.

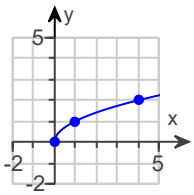
B. The range is $[0,\infty)$.

C. The range is $\{..., -3, -2, -1,0,1,2,3,..\}$.

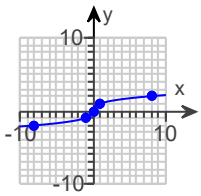
30. Which graphs of functions decrease over part of the domain and increase over the rest of the domain? On what open intervals do they increase? decrease?

Which graphs of functions decrease over part of the domain and increase over the rest of the domain? Select all that apply.

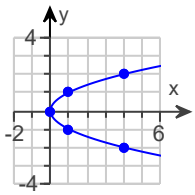
☐ **A.**



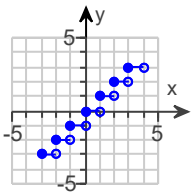
☐ **B.**



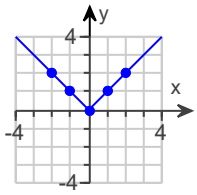
☐ **C.**



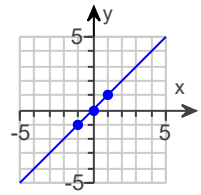
☐ **D.**



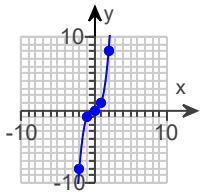
☐ **E.**



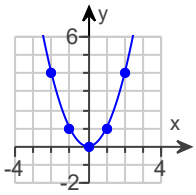
☐ **F.**



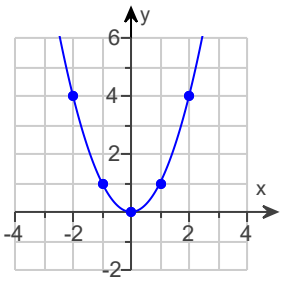
☐ **G.**



☐ **H.**

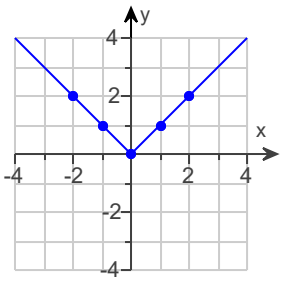


On what open intervals does the graph to the right increase?



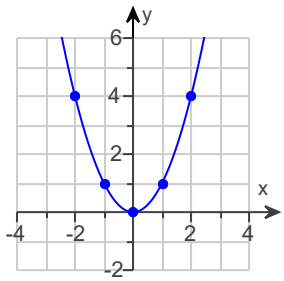
_____ (Type your answer in interval notation.)

On what open intervals does the graph to the right increase?



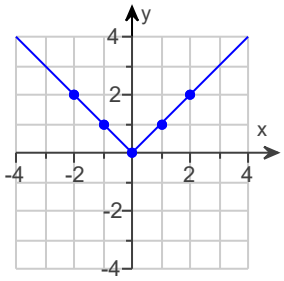
_____ (Type your answer in interval notation.)

On what open intervals does the graph to the right decrease?



_____ (Type your answer in interval notation.)

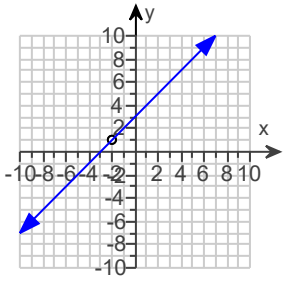
On what open intervals does the graph to the right decrease?



_____ (Type your answer in interval notation.)

---

31. Determine the intervals of the domain over which the function shown to the right is continuous.



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

- **A.** The function is continuous over the interval _____.
  (Type your answer in interval notation.)
- **B.** The function is not continuous.

---

32. Use the piecewise-defined function to find the following values for f(x).

$$f(x) = \begin{cases} 3-5x & \text{if } x \le 2 \\ 2x & \text{if } 2 < x < 8 \\ 3x+5 & \text{if } x \ge 8 \end{cases}$$

$f(-4) =$ _____

$f(2) =$ _____

$f(3) =$ _____

$f(7) =$ _____

$f(9) =$ _____

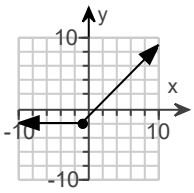
---

33. Graph the piecewise-defined function.

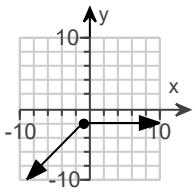
$$f(x) = \begin{cases} x - 1 & \text{if } x \le -1 \\ -2 & \text{if } x > -1 \end{cases}$$

Choose the correct graph.

A.



B.



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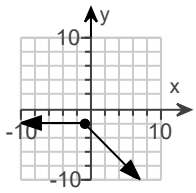
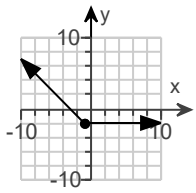


D.

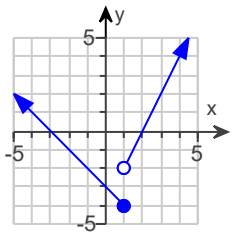


34. Graph the piecewise-defined function.

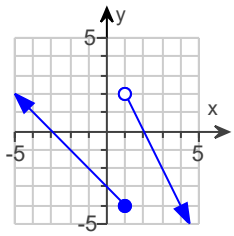
$$f(x) = \begin{cases} -3 - x & \text{if } x \le 1 \\ -4 + 2x & \text{if } x > 1 \end{cases}$$

Choose the correct graph below.

A.



B.



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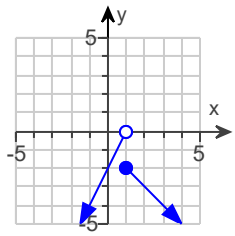
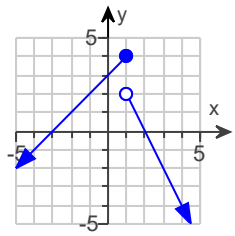


D.

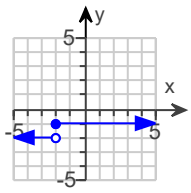


35. Graph the following piecewise function.

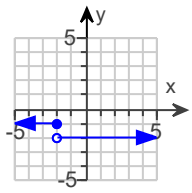
$$f(x) = \begin{cases} -2 & \text{if } x \le -2 \\ -1 & \text{if } x > -2 \end{cases}$$

Choose the correct graph below.

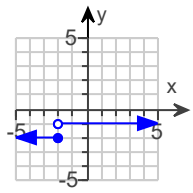
A.



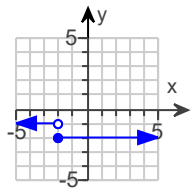
B.



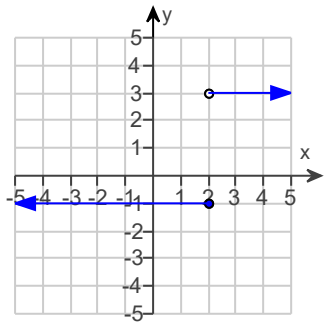
C.



D.



36. Give a rule of the piecewise-defined function. Give the domain and the range.



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

A. $f(x) = \begin{cases} \_\_\_\_\_ & \text{if } x < \_\_\_\_\_ \\ \_\_\_\_\_ & \text{if } x \geq \_\_\_\_\_ \end{cases}$ **B.** $f(x) = \begin{cases} \_\_\_\_\_ & \text{if } x \leq \_\_\_\_\_ \\ \_\_\_\_\_ & \text{if } x > \_\_\_\_\_ \end{cases}$

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

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

B. The domain is _____.
(Type your answer in interval notation.)

What is the range? Select the correct choice below and fill in the answer box within your choice.

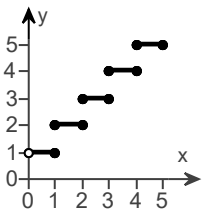
A. The range is $\{\_\_\_\_\_\}$.
(Use a comma to separate answers as needed.)

B. The range is _____.
(Type your answer in interval notation.)

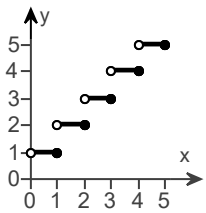
37. First class postage with a private postal service costs $0.28 for all weights through 1 ounce, plus $0.20 for each ounce or fraction of an ounce thereafter. Each letter is required to carry one $0.28 stamp and as many $0.20 stamps as necessary. Graph the function f that models the number of stamps, y, on a letter weighing x ounces over the interval (0,5].

Choose the correct graph.

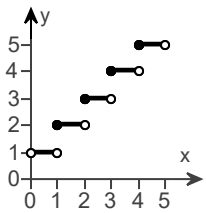
A.



B.



C.



38. Fill in the blank to correctly complete the following sentence.

To graph the function $f(x) = x^2 - 21$, shift the graph of $y = x^2$ down _____ units.

39. Fill in the blank to correctly complete the following sentence.

To graph the function $f(x) = x^2 + 17$, shift the graph of $y = x^2$ up _____ units.

40. Fill in the blank to correctly complete the following sentence.

The graph of the function $f(x) = (x + 10)^2$ is obtained by shifting the graph of $y = x^2$ (1) _____ 10 units.

(1)
- down
- to the left
- up
- to the right

---

41. Fill in the blank to correctly complete the following sentence.

The graph of the function $f(x) = (x - 6)^2$ is obtained by shifting the graph of $y = x^2$ (1) _____ 6 units.

(1)
- to the right
- down
- up
- to the left

---

42. Fill in the blank to correctly complete the following sentence.

The graph of $f(x) = -\sqrt{x}$ is a reflection of the graph of $y = \sqrt{x}$ across the (1) _____

(1)
- x-axis.
- y-axis.

---

43. Fill in the blank to correctly complete the following sentence.

The graph of $f(x) = \sqrt{-x}$ is a reflection of the graph of $y = \sqrt{x}$ across the (1) _____

(1)
- y-axis.
- x-axis.

---

44. Fill in the blanks to correctly complete the following sentence.

To obtain the graph of $f(x) = (x + 10)^3 - 9$, shift the graph of $y = x^3$ to the left _____ units and down _____ units.

---

45. Fill in the blanks to correctly complete the following sentence.

To obtain the graph of $f(x) = (x - 7)^3 + 4$, shift the graph of $y = x^3$ to the right _____ units and up _____ units.

---

46. Fill in the blank to correctly complete the following sentence.

The graph of $f(x) = |-x|$ is the same as the graph of $y = |x|$ because reflecting it across the (1) _____ yields the same ordered pairs.

(1)
- y-axis
- x-axis

---

47. Fill in the blank to correctly complete the following sentence.

The graph of $x = y^2$ is the same as the graph of $x = (-y)^2$ because reflecting it across the (1) _____ yields the same ordered pairs.

(1) ○ x-axis
○ y-axis

---

48. Match each equation in Column I with a description of its graph from Column II as it relates to the graph of $y = x^2$.

I	II
(a) $y = (x - 6)^2$	**A.** a translation 6 units to the left
(b) $y = x^2 - 6$	**B.** a vertical stretching by a factor of 6
(c) $y = 6x^2$	**C.** a translation 6 units down
(d) $y = (x + 6)^2$	**D.** a translation 6 units to the right
(e) $y = x^2 + 6$	**E.** a translation 6 units up

Match the equation in Column I with the correct description in Column II.

I	II
(a) $y = (x - 6)^2$	(1) _____
(b) $y = x^2 - 6$	(2) _____
(c) $y = 6x^2$	(3) _____
(d) $y = (x + 6)^2$	(4) _____
(e) $y = x^2 + 6$	(5) _____

(1) ○ B ○ C ○ E ○ D ○ A
(2) ○ B ○ C ○ D ○ A ○ E
(3) ○ D ○ E ○ A ○ C ○ B
(4) ○ C ○ D ○ B ○ A ○ E
(5) ○ E ○ A ○ B ○ D ○ C

---

49. Match each equation in parts (a)-(i) with the sketch of its graph.

[1] Click the icon to view the graphs.

(a) The correct graph for $y = x^2 + 5$ is (1) _____

(b) The correct graph for $y = x^2 - 5$ is (2) _____

(c) The correct correct graph for $y = (x + 5)^2$ is (3) _____

(d) The correct graph for $y = (x - 5)^2$ is (4) _____

(e) The correct graph for $y = 5x^2$ is (5) _____

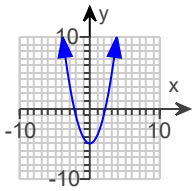
(f) The correct graph for $y = -3x^2$ is (6) _____

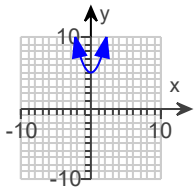
(g) The correct graph for $y = (x - 5)^2 + 3$ is (7) _____

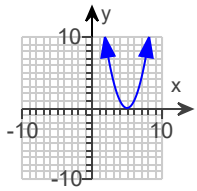
(h) The correct graph for $y = (x + 5)^2 + 3$ is (8) _____

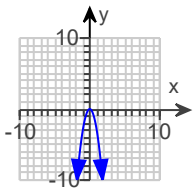
(i) The correct graph for $y = (x + 5)^2 - 3$ is (9) _____

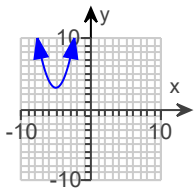
1: Graph/Chart

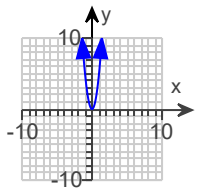
A.


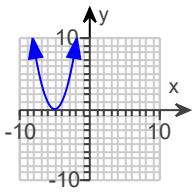
B.


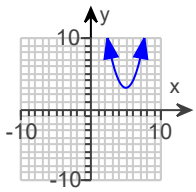
C.


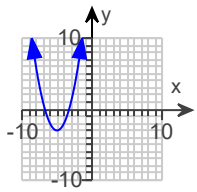
D.


E.


F.


G.


H


I.


(1)	A.	E.	I.	(2)	A.	E.	I.	(3)	A.	E.	I.
	B.	F.			B.	F.			B.	F.	
	C.	G.			C.	G.			C.	G.	
	D.	H.			D.	H.			D.	H.	
(4)	A.	E.	I.	(5)	A.	E.	I.	(6)	A.	E.	I.
	B.	F.			B.	F.			B.	F.	
	C.	G.			C.	G.			C.	G.	
	D.	H.			D.	H.			D.	H.	
(7)	A.	E.	I.	(8)	A.	E.	I.	(9)	A.	E.	I.
	B.	F.			B.	F.			B.	F.	
	C.	G.			C.	G.			C.	G.	
	D.	H.			D.	H.			D.	H.	

50. Match each equation in parts (a)-(i) with the sketch of its graph.

[2] Click the icon to view the graphs.

(a) The correct graph for $y = |x - 7|$ is (1) _____

(b) The correct graph for $y = |x| - 7$ is (2) _____

(c) The correct graph for $y = |x| + 7$ is (3) _____

(d) The correct graph for $y = 7|x|$ is (4) _____

(e) The correct graph for $y = -|x|$ is (5) _____

(f) The correct graph for $y = |-x|$ is (6) _____

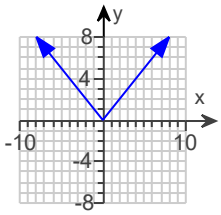
(g) The correct graph for $y = -7|x|$ is (7) _____

(h) The correct graph for $y = |x - 7| + 5$ is (8) _____

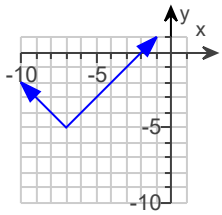
(i) The correct graph for $y = |x + 7| - 5$ is (9) _____

2: Graph/Chart

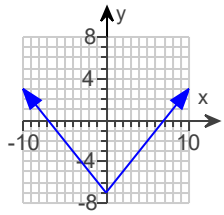
A.



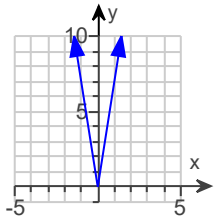
B.



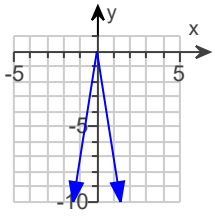
C.



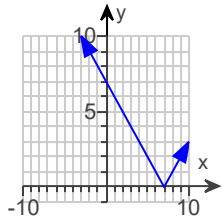
D.



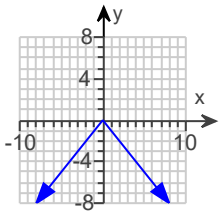
E.



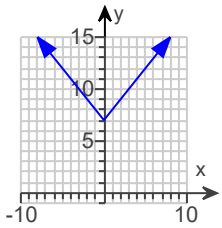
F.



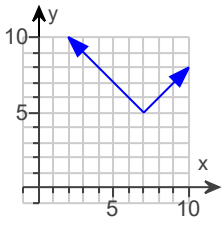
G.



H



I.



(1)	A.	E.	I.	(2)	A.	E.	I.	(3)	A.	E.	I.
	B.	F.			B.	F.			B.	F.	
	C.	G.			C.	G.			C.	G.	
	D.	H.			D.	H.			D.	H.	
(4)	A.	E.	I.	(5)	A.	E.	I.	(6)	A.	E.	I.
	B.	F.			B.	F.			B.	F.	
	C.	G.			C.	G.			C.	G.	
	D.	H.			D.	H.			D.	H.	
(7)	A.	E.	I.	(8)	A.	E.	I.	(9)	A.	E.	I.
	B.	F.			B.	F.			B.	F.	
	C.	G.			C.	G.			C.	G.	
	D.	H.			D.	H.			D.	H.	

51. Without graphing, determine whether the equation has a graph that is symmetric with respect to the x-axis, the y-axis, the origin, or none of these.

$y = x^2 + 15$

Select all that apply.

- **A.** x-axis
- **B.** y-axis
- **C.** origin
- **D.** none of these

52. Without graphing, determine whether the following equation has a graph that is symmetric with respect to the x-axis, the y-axis, the origin, or none of these.

$x^2 + y^2 = 11$

Select all that apply.

- **A.** y-axis
- **B.** x-axis
- **C.** origin
- **D.** none of these

53. Without graphing, determine whether the following equation has a graph that is symmetric with respect to the x-axis, the y-axis, the origin, or none of these.

$y = -7x^3 + x$

Select all that apply.

- **A.** y-axis
- **B.** x-axis
- **C.** origin
- **D.** none of these

54. Without graphing, determine whether the following equation has a graph that is symmetric with respect to the x-axis, the y-axis, the origin, or none of these.

$y = x^2 - x + 6$

Select all that apply.

- ☐ **A.** y-axis
- ☐ **B.** origin
- ☐ **C.** x-axis
- ☐ **D.** none of these

---

55. Determine whether the function is even, odd, or neither.

$f(x) = 4x^3 - 5x^5$

Which term describes the function?

- ○ **A.** even
- ○ **B.** neither
- ○ **C.** odd

---

56. Decide whether f is even, odd, or neither.

$f(x) = x^4 - 4x^2 + 9$

Choose the correct statement.

- ○ **A.** The function is odd.
- ○ **B.** The function is even.
- ○ **C.** The function is neither even nor odd.

---

57. Determine if f is even, odd, or neither.

$f(x) = 2x^8 - 10x^4 + 4x$

Which term describes the function?

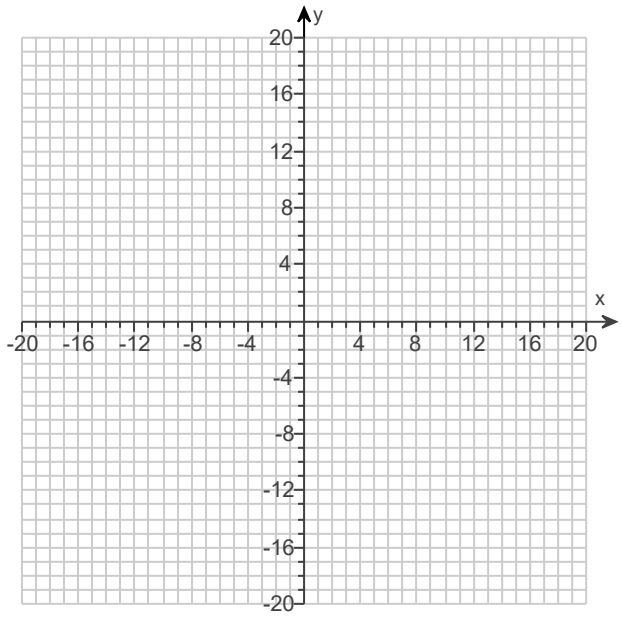
- ○ **A.** even
- ○ **B.** odd
- ○ **C.** neither

---

58. Graph the following function.

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

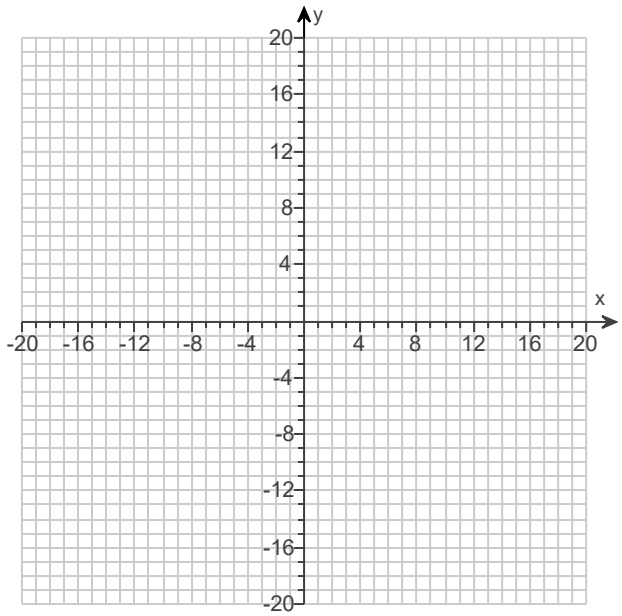
Use the graphing tool to graph the function.



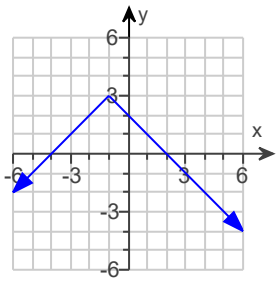
59. Graph the following function.

$g(x) = (x + 1)^2$

Use the graphing tool to graph the function.



60. The adjacent graph is obtained from the graph of $f(x) = |x|$ or $g(x) = \sqrt{x}$ by applying several transformations. Describe the transformations and give the equation for the graph.

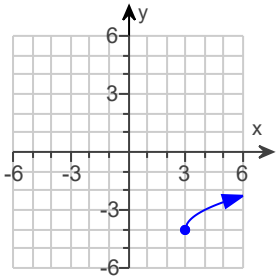


It is the graph of (1) _____ translated _____ unit(s) to the left, reflected across the (2) _____ and translated _____ unit(s) up.

The equation is y = _____.
(Simplify your answer.)

(1) ○ $f(x) = |x|$ ○ $g(x) = \sqrt{x}$ (2) ○ y-axis, ○ x-axis,

61. The adjacent graph is obtained from the graph of $f(x) = |x|$ or $g(x) = \sqrt{x}$ by applying several transformations. Describe the transformations and give the equation for the graph.



It is the graph of (1) _____ translated _____ unit(s) to the (2) _____ and translated _____ unit(s) (3) _____.

The equation is y = _____.
(Simplify your answer.)

(1) ○ $f(x) = |x|$ ○ $g(x) = \sqrt{x}$ (2) ○ left ○ right (3) ○ down. ○ up.

62. Let $f(x) = x - 1$ and $g(x) = x^2 - x$. Find and simplify the expression.

$(f + g)(-1)$

$(f + g)(-1) =$ _____ (Simplify your answer.)

63. Let $f(x) = 2x^2 + 5$ and $g(x) = -2x + 2$. Find the following.

$(f - g)(-3)$

$(f - g)(-3) =$ _____

64. Let $f(x) = x^2 - 15$ and $g(x) = 18 - x$. Perform the composition or operation indicated.

$(fg)(-4)$

$(fg)(-4) =$ _____

65. Let $f(x) = x^2 - 18$ and $g(x) = 14 - x$. Perform the composition or operation indicated.

$\left(\frac{f}{g}\right)(11)$

$\left(\frac{f}{g}\right)(11) =$ _____

(Simplify your answer. Type an integer or a fraction.)

66. Let $f(x) = 2x - 1$ and $g(x) = x^2 - 3$.

Find $(f \circ g)(-2)$.

Then $(f \circ g)(-2) =$ _____. (Simplify your answer.)

67. Without using paper and pencil, evaluate the expression, $(g \circ f)(2)$, given the following functions.

$f(x) = x + 2$ and $g(x) = x^2$

$(g \circ f)(2) =$ _____. (Simplify your answer.)

68. Find the domain of f, where $f(x) = x + 7$.

The domain is _____. (Type your answer in interval notation.)

69. Find the domain of g, where $g(x) = x^2$.

The domain is _____. (Type your answer in interval notation.)

70. Find the domain of $f + g$, where $f(x) = x + 18$ and $g(x) = x^2$.

The domain is _____. (Type your answer in interval notation.)

71. Find the domain of $\frac{f}{g}$, where $f(x) = x + 14$ and $g(x) = x^2$.

The domain is _____. (Type your answer in interval notation.)

72. Let $f(x) = 7x + 3$ and $g(x) = 2x - 7$. Find $(f + g)(x)$, $(f - g)(x)$, $(fg)(x)$, and $\left(\frac{f}{g}\right)(x)$. Give the domain of each.

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

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

$(fg)(x) =$ _____ (Simplify your answer.)

$\left(\frac{f}{g}\right)(x) =$ _____ (Simplify your answer.)

The domain of $f + g$ is _____.
(Type your answer in interval notation.)

The domain of $f - g$ is _____.
(Type your answer in interval notation.)

The domain of fg is _____.
(Type your answer in interval notation.)

The domain of $\frac{f}{g}$ is _____.
(Type your answer in interval notation.)

73. Let $f(x) = \sqrt{6x - 5}$ and $g(x) = \frac{1}{x}$. Find $(f + g)(x)$, $(f - g)(x)$, $(fg)(x)$, and $\left(\frac{f}{g}\right)(x)$. Give the domain of each.

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

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

$(fg)(x) =$ _____ (Simplify your answer.)

$\left(\frac{f}{g}\right)(x) =$ _____ (Simplify your answer.)

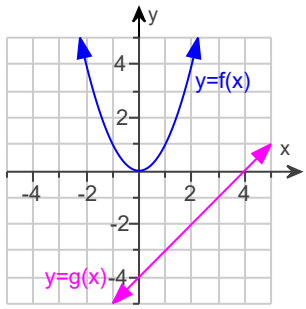
The domain of $f + g$ is _____.
(Type your answer in interval notation.)

The domain of $f - g$ is _____.
(Type your answer in interval notation.)

The domain of fg is _____.
(Type your answer in interval notation.)

The domain of $\frac{f}{g}$ is _____.
(Type your answer in interval notation.)

74. Use the given graph to evaluate the following expressions.



(a) $(f+g)(2)$

(b) $(f-g)(1)$

(c) $(fg)(0)$

(d) $\left(\frac{f}{g}\right)(1)$

(a) $(f+g)(2) =$ _____

(b) $(f-g)(1) =$ _____

(c) $(fg)(0) =$ _____

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

- **A.** $\left(\frac{f}{g}\right)(1) =$ _____
- **B.** $\left(\frac{f}{g}\right)(1)$ is undefined.

75. Use the given table to evaluate each expression in parts **(a)** through **(d)**, if possible.

(a) $(f+g)(2)$ **(b)** $(f-g)(4)$

(c) $(fg)(-2)$ **(d)** $\left(\frac{f}{g}\right)(0)$

x	f(x)	g(x)
−2	0	6
0	7	0
2	10	−4
4	10	5

(a) $(f+g)(2) =$ _____ (Simplify your answer.)

(b) $(f-g)(4) =$ _____ (Simplify your answer.)

(c) $(fg)(-2) =$ _____ (Simplify your answer.)

(d) Find $\left(\frac{f}{g}\right)(0)$. Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- **A.** $\left(\frac{f}{g}\right)(0) =$ _____ (Simplify your answer.)
- **B.** $\left(\frac{f}{g}\right)(0)$ is undefined.

76. For the function $f(x) = x^2 + 2$, find **(a)** $f(x+h)$, **(b)** $f(x+h) - f(x)$, and **(c)** $\frac{f(x+h)-f(x)}{h}$.

(a) $f(x+h) =$ _____ (Simplify your answer.)

(b) $f(x+h) - f(x) =$ _____ (Simplify your answer.)

(c) $\frac{f(x+h)-f(x)}{h} =$ _____ (Simplify your answer.)

77. For the function, $f(x) = x^2 + 7x + 2$, complete parts a through c.

a) $f(x + h) =$ _____ (Simplify your answer.)

b) $f(x + h) - f(x) =$ _____ (Simplify your answer.)

c) $\frac{f(x + h) - f(x)}{h} =$ _____ (Simplify your answer.)

78. Let $f(x) = 3x - 1$, $h(x) = -x - 5$.

Find $(f \circ h)(2)$.

$(f \circ h)(2) =$ _____

79. The tables give some selected ordered pairs for the functions f and g.

x	3	5	9
f(x)	4	9	6

x	11	7	1	20
g(x)	9	5	3	21

Find $(f \circ g)(1)$.

$(f \circ g)(1) =$ _____

80. For the functions $f(x) = -10x + 15$ and $g(x) = 5x + 7$ find the following.

(a) $(f \circ g)(x)$ and its domain
(b) $(g \circ f)(x)$ and its domain

(a) $(f \circ g)(x) =$ _____ (Simplify your answer.)

The domain is _____.
(Type your answer in interval notation.)

(b) $(g \circ f)(x) =$ _____ (Simplify your answer.)

The domain is _____.
(Type your answer in interval notation.)

81. Find $(f \circ g)(x)$ and $(g \circ f)(x)$ for the pair of functions and give the domains.

$f(x) = \frac{2}{x^3}$, $g(x) = 3 - x$

Find $(f \circ g)(x)$.

$(f \circ g)(x) =$ _____

The domain of $f \circ g$ is _____.
(Type your answer in interval notation.)

Find $(g \circ f)(x)$.

$(g \circ f)(x) =$ _____

The domain of $g \circ f$ is _____.
(Type your answer in interval notation.)

82. An oil well off the Gulf Coast is leaking, with the leak spreading oil over the water's surface as a circle. At any time t, in minutes, after the beginning of the leak, the radius of the circular oil slick on the surface is $r(t) = 2t$ feet. Let $A(r) = \pi r^2$ represent the area of a circle of radius r.
(a) Find $(A \circ r)(t)$.
(b) Interpret $(A \circ r)(t)$.
(c) What is the area of the oil slick after 3 min?

(a) $(A \circ r)(t) =$ _____
(Simplify your answer. Type an exact answer, using π as needed.)

(b) It defines (1) _____ in terms of (2) _____.

(c) The area of the oil slick after 3 min is _____ ft^2.
(Simplify your answer. Type an exact answer, using π as needed.)

(1)
- ○ the area of the leak
- ○ time
- ○ the radius of the leak

(2)
- ○ the area of the leak
- ○ time
- ○ the radius of the leak