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| **Student:** James Cook | **Instructor:** James Cook | **Assignment:** Assignment 2 (covered by Test 2) |
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1. Determine whether the following equation defines y as a function of x.

$x^2 + y^2 = 100$

Does the equation $x^2 + y^2 = 100$ define y as a function of x?

- Yes
- No

2. Determine whether the following equation defines y as a function of x.

$y = \sqrt{x + 40}$

Does the equation $y = \sqrt{x + 40}$ define y as a function of x?

- Yes
- No

3. Determine whether the equation defines y as a function of x.

$x^2 + y^5 = 7$

Choose the correct answer below.

- The equation defines y as a function of x.
- The equation does not define y as a function of x.

4. Determine whether the following equation defines y as a function of x.

$|x| - y = 13$

Does the equation $|x| - y = 13$ define y as a function of x?

- Yes
- No

5. Evaluate the function $f(x) = 5x + 7$ at the given values of the independent variable and simplify.

**a.** $f(5)$ **b.** $f(x+1)$ **c.** $f(-x)$

**a.** $f(5) =$ ☐

**b.** $f(x+1) =$ ☐

**c.** $f(-x) =$ ☐

6. Evaluate the function $h(x) = x^4 + 5x^2 + 7$ at the given values of the independent variable and simplify.

**a.** $h(2)$ **b.** $h(-1)$ **c.** $h(-x)$ **d.** $h(3a)$

**a.** $h(2) =$ ☐ (Simplify your answer.)

**b.** $h(-1) =$ ☐ (Simplify your answer.)

**c.** $h(-x) =$ ☐ (Simplify your answer.)

**d.** $h(3a) =$ ☐ (Simplify your answer.)

7. Evaluate the function $f(r) = \sqrt{r+9} - 8$ at the given values of the independent variable and simplify.

**a.** $f(-9)$ **b.** $f(7)$ **c.** $f(x-9)$

**a.** $f(-9) =$ ☐

**b.** $f(7) =$ ☐

**c.** $f(x-9) =$ ☐

8. Evaluate the function $f(x) = \frac{x}{|x|}$ at the given values of the independent variable and simplify.

**a.** $f(6)$ **b.** $f(-6)$ **c.** $f(r^2)$

**a.** $f(6) =$ ☐

**b.** $f(-6) =$ ☐

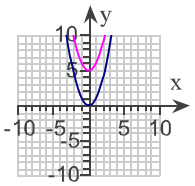
**c.** $f(r^2) =$ ☐

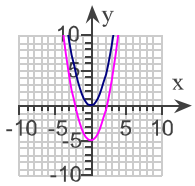
9. Graph the given functions, f and g, on one coordinate plane. Then describe how the graph of g is related to the graph of f.

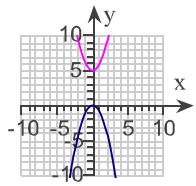
$f(x) = x^2$

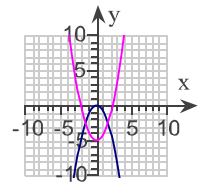
$g(x) = x^2 - 5$

Which is the correct graph of the two functions?

○A. 


○B. 


○C. 


○D. 

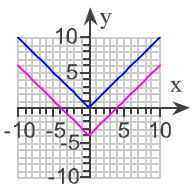

The graph of g (purple) is the graph of f (blue) shifted ☐ by ☐ unit(s).

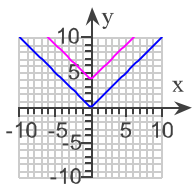
10. Graph the given functions, f and g, on one coordinate plane.

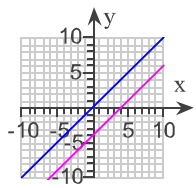
$f(x) = |x|$

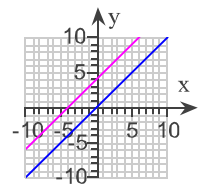
$g(x) = |x| + 4$

Which is the correct graph of the two functions?

○A. 


○B. 


○C. 


○D. 

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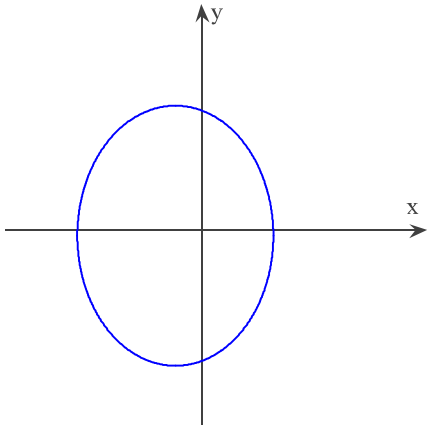
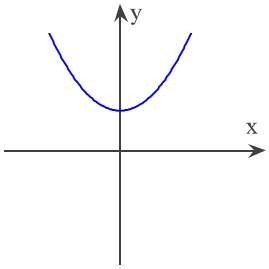
11. Use the vertical line test to identify graphs in which y is a function of x.




Which of the following statements is correct?

- ○ y is a function of x
- ○ y is not a function of x

12. Use the vertical line test to determine if y is a function of x in the graph.

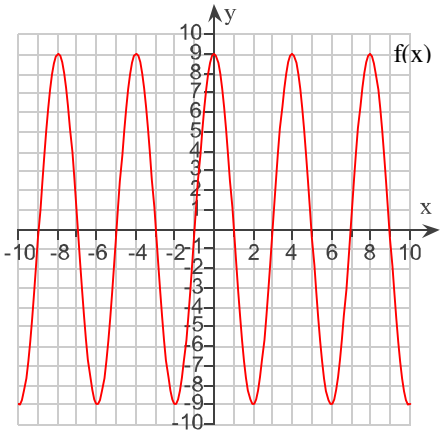



Which of the following statements is correct? Choose the correct answer below.

- ○ y is a function of x
- ○ y is not a function of x

13. Use the graph of f to find the value of $f(-7)$.

$f(-7) =$ ☐



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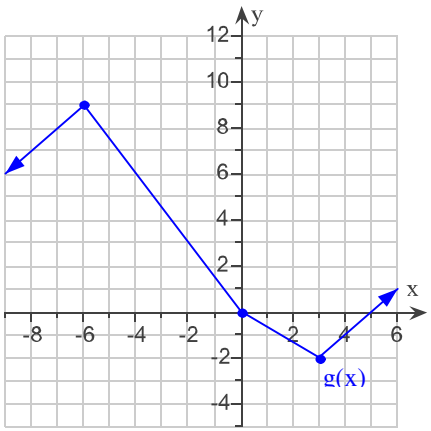
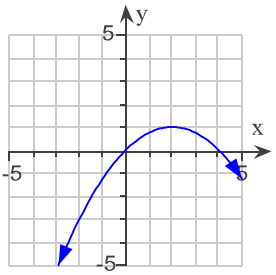
14. Use the graph of g to find g(3).

g(3) = ☐




15. Use the graph to determine **a.** the function's domain; **b.** the function's range; **c.** the x-intercepts, if any; **d.** the y-intercept, if any; and **e.** the missing function values, indicated by question marks, below.

$f(-2) = ?$ $f(2) = ?$




**a.** The domain is ☐. (Use interval notation.)

**b.** The range is ☐. (Use interval notation.)

**c.** Select the correct choice below and fill in any answer boxes within your choice.

○A. The x-intercept(s) is (are) ☐.
(Type an integer. Use a comma to separate answers as needed.)

○B. There is no x-intercept.

**d.** Select the correct choice below and fill in any answer boxes within your choice.

○A. The y-intercept is ☐. (Type an integer.)

○B. There is no y-intercept.

**e.** $f(-2) =$ ☐

$f(2) =$ ☐

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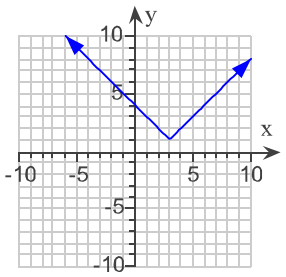
16. Use the graph to determine the following.




**a.** the function's domain
**b.** the function's range
**c.** the x-intercepts, if any
**d.** the y-intercept, if any
**e.** the function values, f(2) and f(4).

Assume that the graph of the function continues its trend beyond the displayed coordinate grid.

**a.** What is the function's domain?

☐ (Type your answer in interval notation.)

**b.** What is the function's range?

☐ (Type your answer in interval notation.)

**c.** Find the x-intercept(s), if there are any. Select the correct choice below and fill in any answer boxes within your choice.

○A. ☐ (Type an integer. Use a comma to separate answers as needed.)

○B. There is no x-intercept.

**d.** Find the y-intercept(s), if there are any. Select the correct choice below and fill in any answer boxes within your choice.

○A. ☐ (Type an integer. Use a comma to separate answers as needed.)

○B. There is no y-intercept.

**e.** Find the values of the function.

f(2) = ☐
f(4) = ☐

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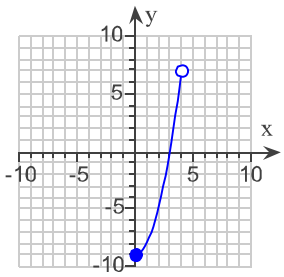
17. Use the graph to determine the following.




**a.** the function's domain
**b.** the function's range
**c.** the x-intercepts, if any
**d.** the y-intercept , if any
**e.** the function value indicated below.

f(1)

**a.** What is the function's domain?

☐ (Type your answer in interval notation.)

**b.** What is the function's range?

☐ (Type your answer in interval notation.)

**c.** Enter the x-intercept(s). Select the correct choice below and fill in any answer boxes within your choice.

○A. The x-intercept(s) is(are) ☐.
(Type an integer. Use a comma to separate answers as needed.)

○B. There is no x-intercept.

**d.** Enter the y-intercept(s). Select the correct choice below and fill in any answer boxes within your choice.

○A. The y-intercept is ☐. (Type an integer.)

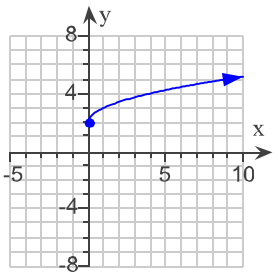
○B. There is no y-intercept.

**e.** Find the value of the function.

f(1) = ☐

18. Use the graph to determine **a.** the function's domain; **b.** the function's range; **c.** the x-intercepts, if any; **d.** the y-intercept, if any; and **e.** the missing function value, indicated by the question mark, below.

$f(9) = ?$




**a.** The domain of the function is ☐. (Type your answer in interval notation.)

**b.** The range of the function is ☐. (Type your answer in interval notation.)

**c.** Determine the x-intercept, if any. Select the correct choice below and fill in any answer boxes within your choice.

○ A. The x-intercept(s) is (are) ☐.
(Type an integer. Use a comma to separate answers as needed.)

○ B. There is no x-intercept.

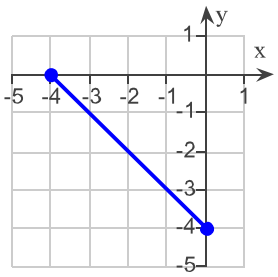
**d.** Determine the y-intercept, if any. Select the correct choice below and fill in any answer boxes within your choice.

○ A. The y-intercept is ☐. (Type an integer.)

○ B. There is no y-intercept.

**e.** $f(9) =$ ☐

19. Use the graph to determine **a.** the function's domain; **b.** the function's range; **c.** the x-intercepts, if any; **d.** the y-intercept, if any; **e.** the function values indicated below.




$f(-4)$

**a.** What is the domain?

☐ (Type your answer in interval notation.)

**b.** What is the range?

☐ (Type your answer in interval notation.)

**c.** What is the x-intercept? Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

○ A. $x =$ ☐

○ B. There is no x-intercept.

**d.** What is the y-intercept? Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

○ A. $y =$ ☐

○ B. There is no y-intercept.

**e.** What is the value of the function?

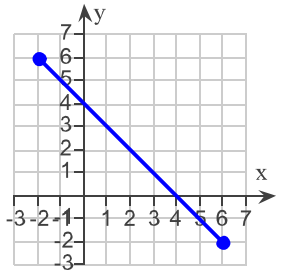
$f(-4) =$ ☐

20. Use the graph to determine

**a.** intervals on which the function is increasing, if any.

**b.** intervals on which the function is decreasing, if any.

**c.** intervals on which the function is constant, if any.




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

A. The function is increasing on the interval(s) ☐.
(Type your answer in interval notation. Use a comma to separate answers as needed.)

B. The function is never increasing.

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

A. The function is decreasing on the interval(s) ☐.
(Type your answer in interval notation. Use a comma to separate answers as needed.)

B. The function is never decreasing.

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

A. The function is constant on the interval(s) ☐.
(Type your answer in interval notation. Use a comma to separate answers as needed.)

B. The function is never constant.

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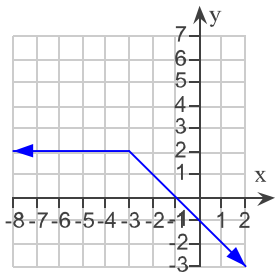
21. Use the graph to determine

**a.** intervals on which the function is increasing, if any.

**b.** intervals on which the function is decreasing, if any.

**c.** intervals on which the function is constant, if any.




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

A. The function is increasing on the interval(s) ☐.
(Type your answer in interval notation. Use a comma to separate answers as needed.)

B. There is no interval on which the function is increasing.

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

A. The function is decreasing on the interval(s) ☐.
(Type your answer in interval notation. Use a comma to separate answers as needed.)

B. There is no interval on which the function is decreasing.

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

A. The function is constant on the interval(s) ☐.
(Type your answer in interval notation. Use a comma to separate answers as needed.)

B. There is no interval on which the function is constant.

22. Determine if the function is even, odd, or neither.

$f(x) = x^9 + x^7$

The function f is:

A. odd

B. even

C. neither

23. Determine if the function is even, odd, or neither.

$g(x) = x^{12} + x^3$

The function f is:

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

24. Determine if the function is even, odd, or neither.

$h(x) = x^4 - x^6$

The function h is:

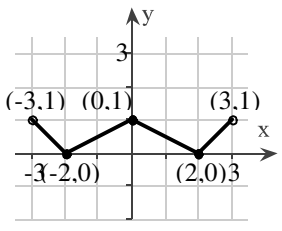
- A. odd
- B. neither
- C. even

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

$f(x) = 3x\sqrt{7 - x^2}$

The function $f(x) = 3x\sqrt{7 - x^2}$ is [ ] function.

26. Using the given graph of the function f, find whether the function is even, odd, or neither.




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

- Odd
- Even
- Neither

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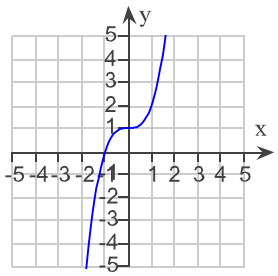
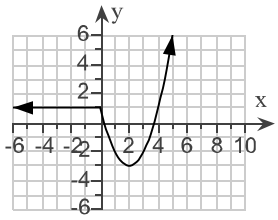
27. Use possible symmetry of the graph to determine whether it is the graph of an even function, an odd function, or a function that is neither even nor odd.




- ○ The function is neither even nor odd.
- ○ The function is odd.
- ○ The function is even.

28. Use the graph of f to determine each of the following. Where applicable, use interval notation.

(a) the domain of f
(b) the range of f
(c) the number at which f has a relative minimum
(d) the relative minimum of f




(a) What is the domain of f?

☐ (Use interval notation.)

(b) What is the range of f?

☐ (Use interval notation.)

(c) What is the number at which f has a relative minimum?

☐

(d) What is the relative minimum of f?

☐

29. Evaluate the piecewise function at the given values of the independent variable.

$$f(x) = \begin{cases} 3x + 5 & \text{if } x < 0 \\ 2x + 6 & \text{if } x \geq 0 \end{cases}$$

(a) $f(-3)$ (b) $f(0)$ (c) $f(3)$

(a) $f(-3) =$ ☐

(b) $f(0) =$ ☐

(c) $f(3) =$ ☐

30. Evaluate the piecewise function at the given values of the independent variable.

$$g(x) = \begin{cases} x + 4 & \text{if } x \geq -4 \\ -(x + 4) & \text{if } x < -4 \end{cases}$$

(a) $g(0)$ (b) $g(-7)$ (c) $g(1)$

(a) $g(0) =$ ☐

(b) $g(-7) =$ ☐

(c) $g(1) =$ ☐

31. Evaluate the piecewise function at the given values of the independent variable.

$$h(x) = \begin{cases} \dfrac{x^2 - 25}{x - 5} & \text{if } x \neq 5 \\ 8 & \text{if } x = 5 \end{cases}$$

(a) $h(3)$ (b) $h(0)$ (c) $h(5)$

(a) $h(3) =$ ☐

(b) $h(0) =$ ☐

(c) $h(5) =$ ☐

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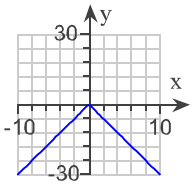
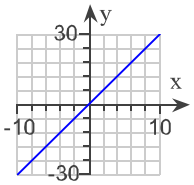
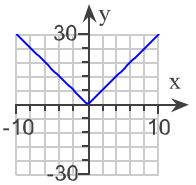
32. The domain of the piecewise function is $(-\infty,\infty)$.
**a.** Graph the function.
**b.** Use your graph to determine the function's range.

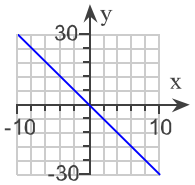
$$f(x)=\begin{cases} 3x & \text{if } x<0 \\ -3x & \text{if } x\geq 0 \end{cases}$$

**a.** Choose the correct graph below.

○A. 


○B. 


○C. 

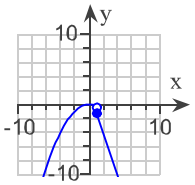

○D. 

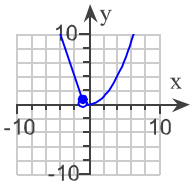

**b.** The range of f(x) is ☐. (Type your answer in interval notation.)

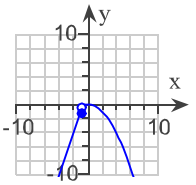
33. The domain of the piecewise function is $(-\infty,\infty)$.
**a.** Graph the function.
**b.** Use your graph to determine the function's range.

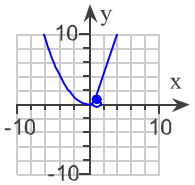
$$f(x)=\begin{cases} \frac{1}{4}x^2 & \text{if } x<1 \\ 3x-2 & \text{if } x\geq 1 \end{cases}$$

**a.** Choose the correct graph below.

○A. 


○B. 


○C. 

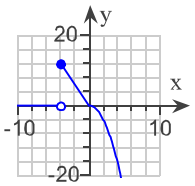

○D. 

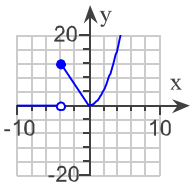

**b.** The range of f(x) is ☐. (Type your answer in interval notation.)

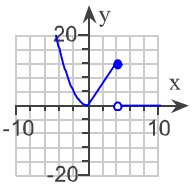
34. The domain of the piecewise function is $(-\infty,\infty)$.
**a.** Graph the function.
**b.** Use your graph to determine the function's range.

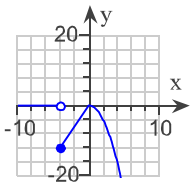
$$f(x)=\begin{cases} 0 & \text{if } x<-4 \\ -3x & \text{if } -4\leq x<0 \\ x^2 & \text{if } x\geq 0 \end{cases}$$

**a.** Choose the correct graph below.

○A. 


○B. 


○C. 


○D. 


**b.** The range of f(x) is ☐. (Type your answer in interval notation.)

35. Find the slope of the line passing through the pair of points or state that the slope is undefined. Then indicate whether the line through the points rises, falls, is horizontal, or is vertical.

$(-6,7)$ and $(6,7)$

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

A. The slope is ▢. (Simplify your answer.)

B. The slope is undefined.

Indicate whether the line through the points rises, falls, is horizontal, or is vertical.

A. The line rises from left to right.

B. The line is horizontal.

C. The line falls from left to right.

D. The line is vertical.

36. Find the slope of the line passing through the pair of points or state that the slope is undefined. Then indicate whether the line through the points rises, falls, is horizontal, or is vertical.

$(-2,-1)$ and $(-2,-7)$

Select the correct choice below and fill in the answer box within your choice.

A. The slope is ▢. (Simplify your answer.)

B. The slope is undefined.

Indicate whether the line through the points rises, falls, is horizontal, or is vertical.

The line rises from left to right.

The line falls from left to right.

The line is vertical.

The line is horizontal.

37. Write the point-slope form of the line's equation satisfying the given conditions. Then use the point-slope form of the equation to write the slope-intercept form of the equation in function notation.

Slope = 4, passing through (2,3)

What is the point-slope form of the equation of the line?

☐

(Simplify your answer. Use integers or fractions for any numbers in the equation.)

What is the slope-intercept form of the equation of the line in function notation?

☐

(Simplify your answer. Use integers or fractions for any numbers in the equation.)

38. Use the given conditions to write an equation for the line in point-slope form and slope-intercept form.

Passing through $(-2,-5)$ and $(2,1)$

Type the point-slope form of the equation of the line.

☐

(Use integers or simplified fractions for any numbers in the equation.)

Type the slope-intercept form of the equation of the line.

☐

(Use integers or simplified fractions for any numbers in the equation.)

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39. Give the slope and y-intercept of the line whose equation is given. Then identify the graph of the line.

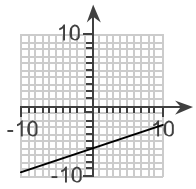
$$y = -\frac{1}{3}x + 6$$

Slope: ☐ (Simplify your answer.)

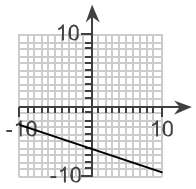
y-intercept: ☐ (Simplify your answer.)

Which graph represents the given equation?

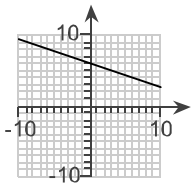
○A.



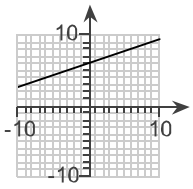

○B.




○C.

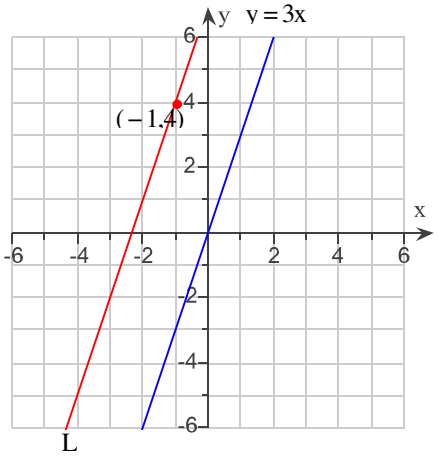



○D.




40. Write an equation for line L in point-slope form and slope-intercept form.

L is parallel to y = 3x.




Write an equation for line L in point-slope form.

☐

Write an equation for line L in slope-intercept form.

☐

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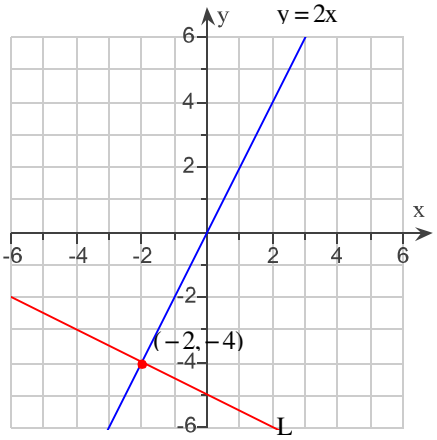
41. Write an equation for line L in point-slope form and slope-intercept form.

L is perpendicular to $y = 2x$.




Write an equation for line L in point-slope form.

☐

(Simplify your answer. Use integers or fractions for any numbers in the equation.)

Write an equation for line L in slope-intercept form.

☐

(Simplify your answer. Use integers or fractions for any numbers in the equation.)

42. Use the given conditions to write an equation for the line in point-slope form and in slope-intercept form.

Passing through $(3, -3)$ and perpendicular to the line whose equation is $y = \frac{1}{2}x + 2$

Write an equation for the line in point-slope form.

☐

(Simplify your answer. Use integers or fractions for any numbers in the equation.)

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

☐

(Simplify your answer. Use integers or fractions for any numbers in the equation.)

43. Find the average rate of change of the function $f(x) = x^2 + 8x$ from $x_1 = 3$ to $x_2 = 4$.

The average rate of change is ☐.

44. Find the average rate of change of the function $f(x) = \sqrt{x}$ from $x_1 = 4$ to $x_2 = 16$.

The average rate of change is ☐. (Type an integer or a simplified fraction.)

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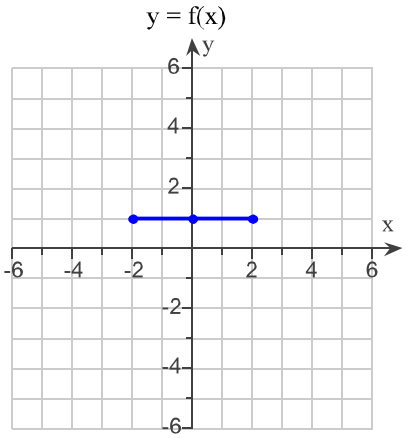
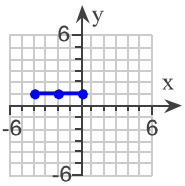
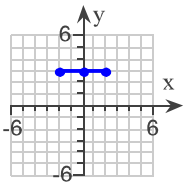
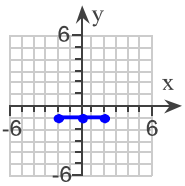
45. Use the graph of $y = f(x)$ to graph the function $g(x) = f(x) + 2$.

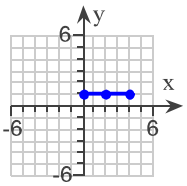



Choose the correct graph of g below.

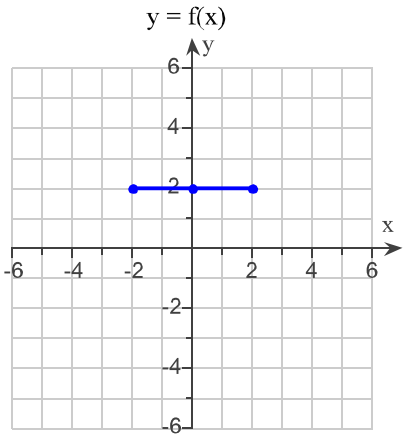
A.



B.


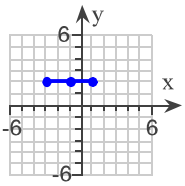

C.


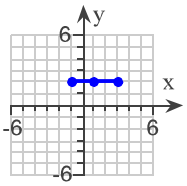

D.


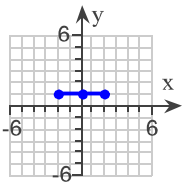

46. Use the graph of $y = f(x)$ to graph the function $g(x) = f(x + 1)$.

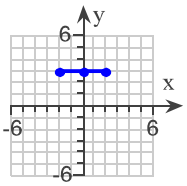



Choose the correct graph of g below.

A.



B.



C.



D.


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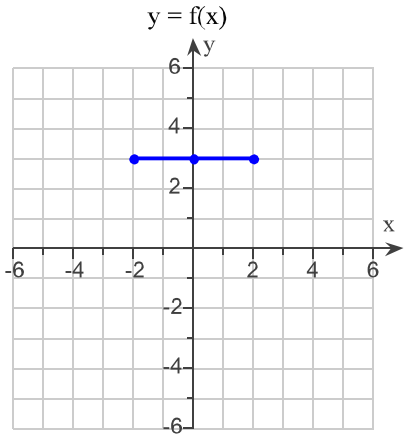
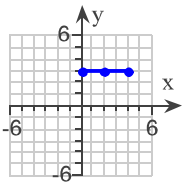
47. Use the graph of $y = f(x)$ to graph the function $g(x) = f(-x)$.

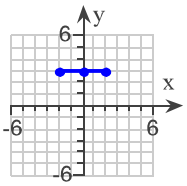



Choose the correct graph of g below.

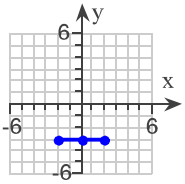
○A.



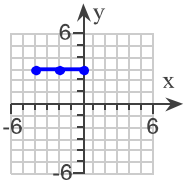

○B.



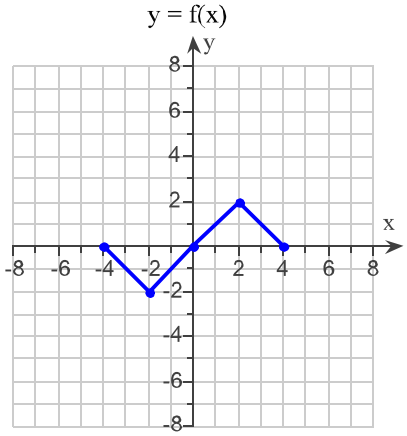

○C.




○D.

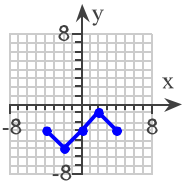



48. Use the graph of $y = f(x)$ to graph the function $g(x) = f(x) - 3$.

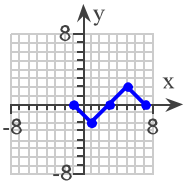



Choose the correct graph of g below.

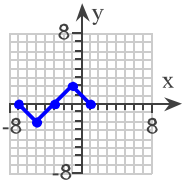
○A.



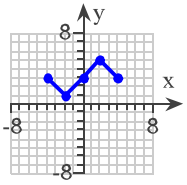

○B.




○C.




○D.



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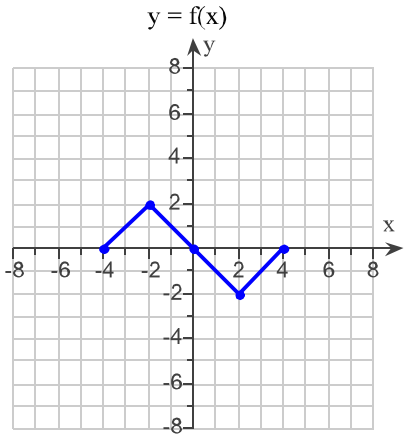
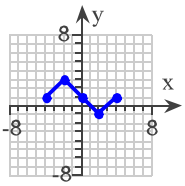
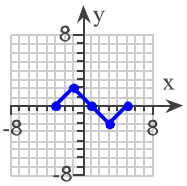
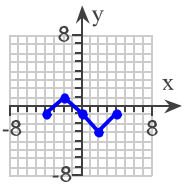
49. Use the graph of $y = f(x)$ to graph the function $g(x) = f(x - 1)$.




Choose the correct graph of g below.

A.



B.



C.
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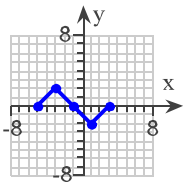
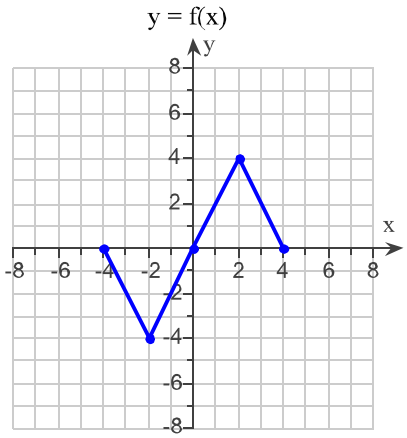
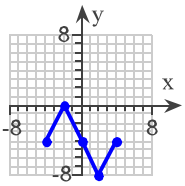
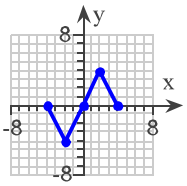


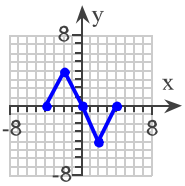

50. Use the graph of $y = f(x)$ to graph the function $g(x) = -f(x)$.

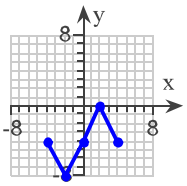



Choose the correct graph of g below.

A.



B.



C.



D.


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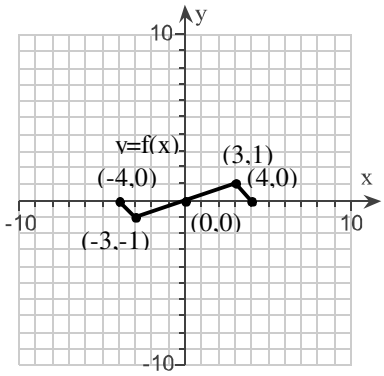
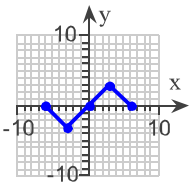
51. Use the graph of $y = f(x)$ shown below to graph the function g.

$$g(x) = 3f(x)$$

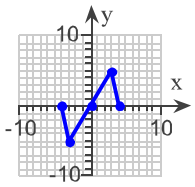



Choose the correct graph below.

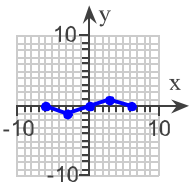
○A.



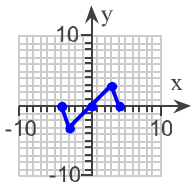

○B.




○C.

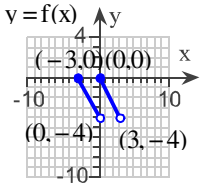



○D.



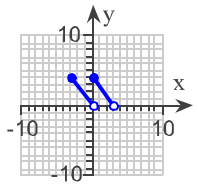

52. Use the graph of $y = f(x)$ shown to the right to graph the following function g.

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

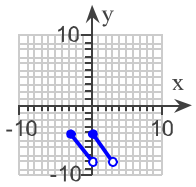



Choose the correct graph below.

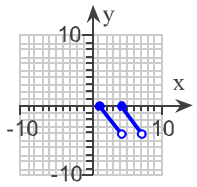
○A.



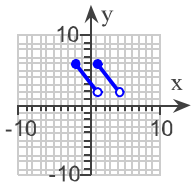

○B.




○C.




○D.



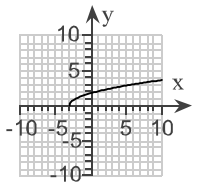
| | | |
|---|---|---|
| **Student:** James Cook | **Instructor:** James Cook | **Assignment:** Assignment 2 (covered by Test 2) |
| **Date:** 8/19/11 | **Course:** Math 121, section 3, Fall 2011 | |
| **Time:** 2:42 PM | **Book:** Blitzer: College Algebra, 5e | |

53. Use transformations of $f(x) = \sqrt{x}$ to graph the following function.

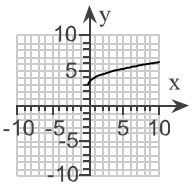
$$g(x) = \sqrt{x} - 3$$

Choose the correct graph below.

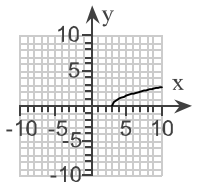
A.



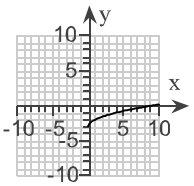

B.




C.

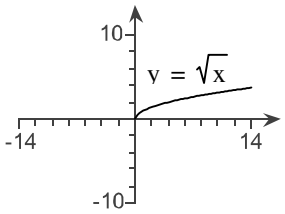


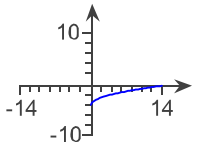

D.

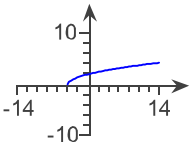


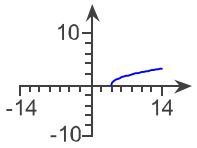

54. Graph the function using the techniques of shifting, compressing, stretching, and/or reflecting. Start with the graph of the basic function shown below.

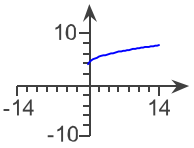
$$h(x) = \sqrt{x+4}$$



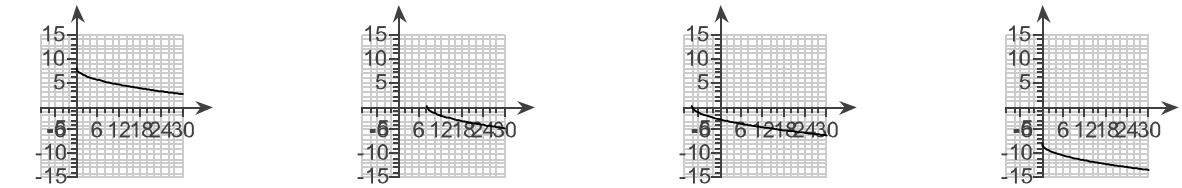



55. Graph the square root function, $f(x) = \sqrt{x}$. Then use transformations of this graph to determine the graph of the given function.

$$h(x) = -\sqrt{x+8}$$

Choose the correct graph of h(x).

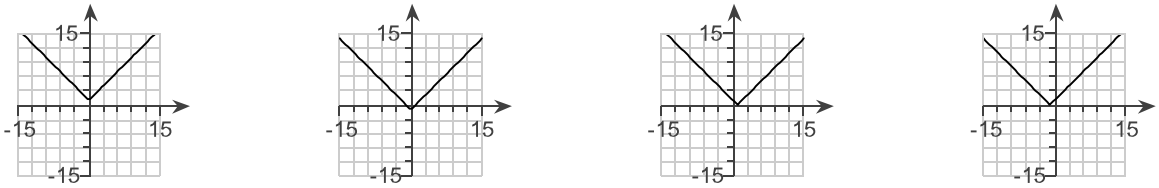


56. Begin by graphing the absolute value function, $f(x) = |x|$. Then use transformations of this graph to determine the graph of the given function.

$$g(x) = |x| + 1$$

Choose the correct graph of g(x).

A. B. C. D.

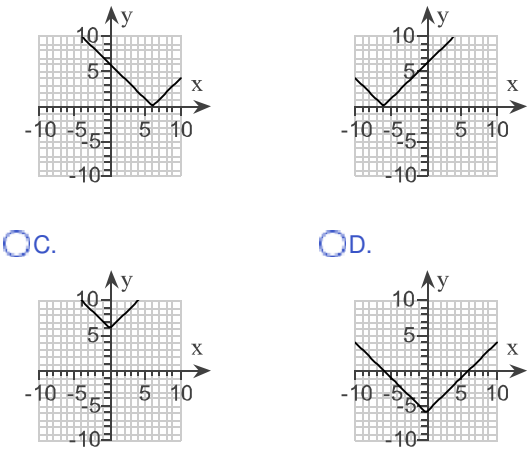


57. Use transformations of $f(x) = |x|$ to graph the following function.

$$g(x) = |x + 6|$$

Choose the correct graph below.

A. B. C. D.

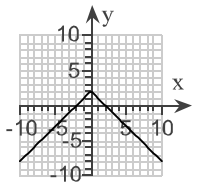


58. Use transformations of $f(x) = |x|$ to graph the following function.

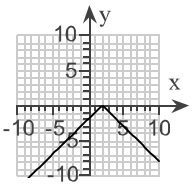
$$h(x) = -|x+2|$$

Choose the correct graph below.

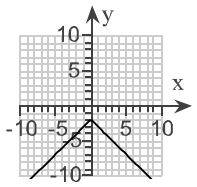
A.



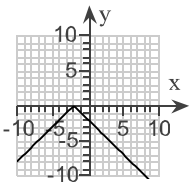

B.




C.




D.




59. Find the domain of the function.

$$f(x) = \frac{8}{x-7} + \frac{4}{x-5}$$

What is the domain of f?

A. $(-\infty,7)\cup(7,\infty)$

B. $(-\infty,5)\cup(5,7)\cup(7,\infty)$

C. $(-\infty,\infty)$

D. $(-\infty,0)\cup(0,\infty)$

60. Find the domain of the function.

$$f(x) = \frac{4}{x^2+16} + \frac{8}{x^2-1}$$

What is the domain of f?

☐ (Type your answer in interval notation.)

61. Find the domain of the function.

$f(x) = \sqrt{x - 14}$

What is the domain of f?

- A. $(-\infty, 14) \cup (14, \infty)$
- B. $[0, \infty)$
- C. $(-\infty, \infty)$
- D. $[14, \infty)$

62. Find the domain of the function.

$f(x) = \sqrt{x - 12} + \sqrt{x + 12}$

What is the domain of f?

- A. $[-12, \infty)$
- B. $[0, \infty)$
- C. $(-\infty, \infty)$
- D. $[12, \infty)$

63. Find $f+g$, $f-g$, $fg$ and $\frac{f}{g}$. Determine the domain for each function.

$f(x) = 4x + 4,\ g(x) = x + 6$

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

What is the domain of $f+g$?

- ○ $[0,\infty)$
- ○ $(-\infty,-2)\cup(-2,\infty)$
- ○ $(-2,\infty)$
- ○ $(-\infty,\infty)$

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

What is the domain of $f-g$?

- ○ $\left(\frac{2}{3},\infty\right)$
- ○ $\left(-\infty,\frac{2}{3}\right)\cup\left(\frac{2}{3},\infty\right)$
- ○ $[0,\infty)$
- ○ $(-\infty,\infty)$

$(fg)(x) =$ ☐

What is the domain of $fg$?

- ○ $(-\infty,\infty)$
- ○ $[0,\infty)$
- ○ $(-\infty,-1)\cup(-1,\infty)$
- ○ $(-\infty,-6)\cup(-6,\infty)$

$\left(\frac{f}{g}\right)(x) =$ ☐

What is the domain of $\frac{f}{g}$?

63. (cont.)

- $(-\infty,\infty)$
- $(-\infty,-6)\cup(-6,\infty)$
- $[0,\infty)$
- $(-6,\infty)$

64. Find $f+g$, $f-g$, $fg$, and $\frac{f}{g}$. Determine the domain for each function.

$f(x)=\sqrt{x}$ ; $g(x)=x-14$

$(f+g)(x)=$ ☐ (Simplify your answer.)

What is the domain of $f+g$?

- ○ $(-\infty,0)\cup(0,\infty)$
- ○ $(0,\infty)$
- ○ $[0,\infty)$
- ○ $(-\infty,\infty)$

$(f-g)(x)=$ ☐ (Simplify your answer.)

What is the domain of $f-g$?

- ○ $(0,\infty)$
- ○ $(-\infty,0)\cup(0,\infty)$
- ○ $[0,\infty)$
- ○ $(-\infty,\infty)$

$(fg)(x)=$ ☐ (Simplify your answer.)

What is the domain of $fg$?

- ○ $(-\infty,0)\cup(0,\infty)$
- ○ $[0,\infty)$
- ○ $(0,\infty)$
- ○ $(-\infty,\infty)$

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

What is the domain of $\frac{f}{g}$?

64. (cont.)

- $[0,\infty)$
- $(-\infty,\infty)$
- $(-\infty,14)\cup(14,\infty)$
- $[0,14)\cup(14,\infty)$

65. Given $f(x) = \sqrt{13 - x}$ and $g(x) = \sqrt{x - 13}$, find $f + g$, $f - g$, $fg$, and $\frac{f}{g}$. Determine the domain for each function.

$(f + g)(x) =$ ☐

What is the domain of $f + g$?

- ○ $[13, \infty)$
- ○ $\varnothing$
- ○ $[13, 13]$
- ○ $(-\infty, -13]$

$(f - g)(x) =$ ☐

What is the domain of $f - g$?

- ○ $[13, 13]$
- ○ $(-\infty, -13]$
- ○ $[13, \infty)$
- ○ $\varnothing$

$(fg)(x) =$ ☐

What is the domain of $fg$?

- ○ $(-\infty, -13]$
- ○ $[13, \infty)$
- ○ $\varnothing$
- ○ $[13, 13]$

$\left(\frac{f}{g}\right)(x) =$ ☐

What is the domain of $\frac{f}{g}$?

65. (cont.)

- ○ $[13,13]$
- ○ $(-\infty,-13]$
- ○ $[13,\infty)$
- ○ $\varnothing$

66. For $f(x)=9x$ and $g(x)=x+7$, find

**a.** $(f\circ g)(x)$; **b.** $(g\circ f)(x)$; **c.** $(f\circ g)(3)$

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

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

**c.** $(f\circ g)(3)=$ ☐

67. For $f(x)=x+5$ and $g(x)=2x+2$, find the following functions.

**a.** $(f\circ g)(x)$; **b.** $(g\circ f)(x)$; **c.** $(f\circ g)(0)$

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

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

**c.** $(f\circ g)(0)=$ ☐

68. For $f(x)=5x-4$ and $g(x)=4x^2-1$, find the following functions.

**a.** $(f\circ g)(x)$; **b.** $(g\circ f)(x)$; **c.** $(f\circ g)(-1)$

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

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

**c.** $(f\circ g)(-1)=$ ☐ (Simplify your answer.)

69. For $f(x) = x^2 + 9$ and $g(x) = x^2 - 1$, find

**a.** $(f \circ g)(x)$; **b.** $(g \circ f)(x)$; **c.** $(f \circ g)(3)$

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

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

**c.** $(f \circ g)(3) =$ ☐

70. For $f(x) = 4 - x$ and $g(x) = 3x^2 + x + 5$, find

**a.** $(f \circ g)(x)$; **b.** $(g \circ f)(x)$; **c.** $(f \circ g)(2)$

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

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

**c.** $(f \circ g)(2) =$ ☐

71. For $f(x) = 9x - 6$ and $g(x) = \dfrac{x+6}{9}$ find

**a.** $(f \circ g)(x)$; **b.** $(g \circ f)(x)$; **c.** $(f \circ g)(9)$

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

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

**c.** $(f \circ g)(9) =$ ☐

72. For $f(x) = \frac{9}{x}$ and $g(x) = \frac{9}{x}$ find

**a.** $(f \circ g)(x)$; **b.** $(g \circ f)(x)$; **c.** $(f \circ g)(6)$

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

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

**c.** $(f \circ g)(6) =$ ☐

73. Express the given function h as a composition of two functions f and g so that $h(x) = (f \circ g)(x)$, where one of the functions is $9x - 2$.

$h(x) = (9x - 2)^7$

$f(x) =$ ☐

$g(x) =$ ☐

74. Express the given function h as a composition of two functions f and g so that $h(x) = (f \circ g)(x)$, where one of the functions is $x^4 - 1$.

$h(x) = \sqrt[9]{x^4 - 1}$

$f(x) =$ ☐

$g(x) =$ ☐

75. Find functions f and g so that $f \circ g = H$.

$H(x) = |6x + 9|$

Choose the correct pair of functions.

A. $f(x) = |-x|$, $g(x) = \frac{x - 9}{6}$

B. $f(x) = 6x + 9$, $g(x) = |x|$

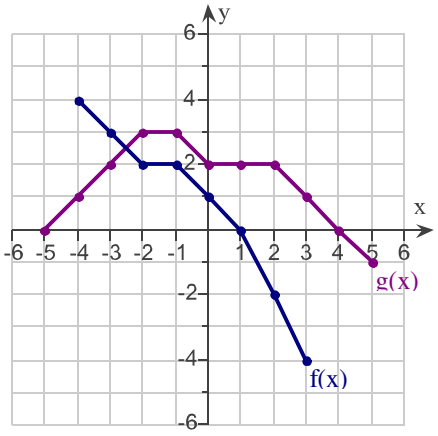
C. $f(x) = \frac{x - 9}{6}$, $g(x) = |-x|$

D. $f(x) = |x|$, $g(x) = 6x + 9$

| | | |
|---|---|---|
| **Student:** James Cook | **Instructor:** James Cook | **Assignment:** Assignment 2 (covered by Test 2) |
| **Date:** 8/19/11 | **Course:** Math 121, section 3, Fall 2011 | |
| **Time:** 2:42 PM | **Book:** Blitzer: College Algebra, 5e | |

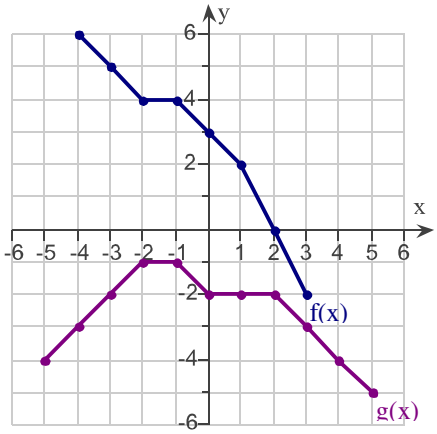
76. Use the graphs of f and g to find $(f+g)(-3)$.

$(f+g)(-3) =$ ☐

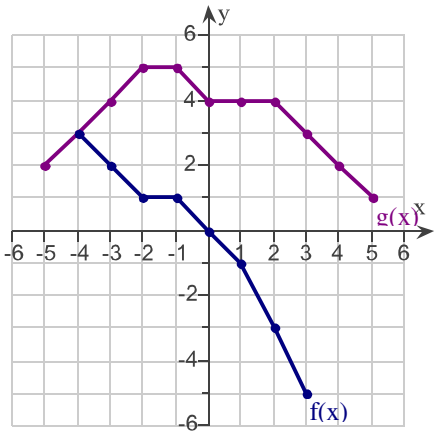



77. Use the graphs of f and g to find $(fg)(-3)$.

$(fg)(-3) =$ ☐

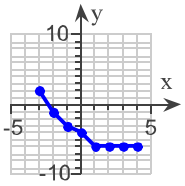



78. Use the graphs of f and g to graph $f+g$.

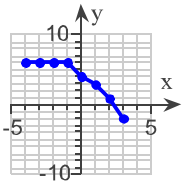



Choose the correct graph below.

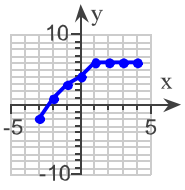
○A.



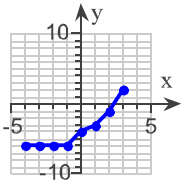

○B.




○C.

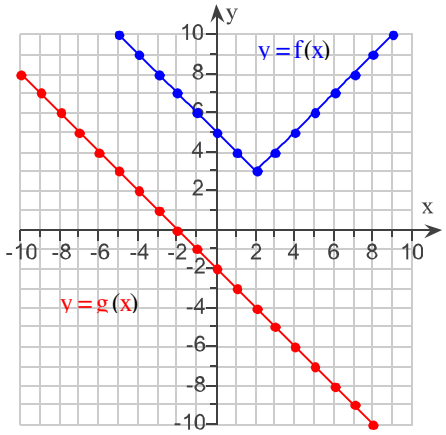



○D.



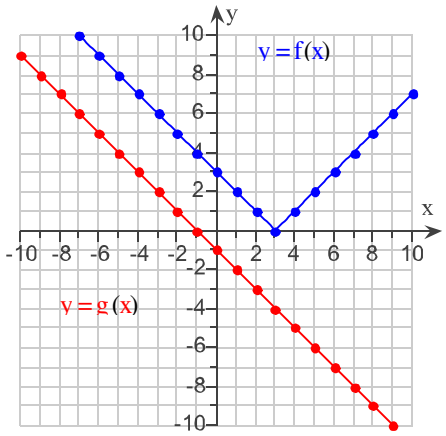
79. Use the graphs of f and g to evaluate the composite function.

$(f \circ g)(2)$




$(f \circ g)(2) =$ ☐

80. Use the graphs of f and g to evaluate the composite function, $(g \circ f)(-5)$.




$(g \circ f)(-5) =$ ☐

81. Find f(g(x)) and g(f(x)) and determine whether the pair of functions f and g are inverses of each other.

$f(x) = 4x$ and $g(x) = \frac{x}{4}$

**a.** $f(g(x)) =$ ☐

**b.** $g(f(x)) =$ ☐

**c.** ○ f and g are not inverses of each other.

○ f and g are inverses of each other.

82. Find f(g(x)) and g(f(x)) and determine whether the pair of functions f and g are inverses of each other.

$f(x) = 6x - 4$ and $g(x) = \frac{x + 6}{4}$

**a.** $f(g(x)) =$ ☐

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

**b.** $g(f(x)) =$ ☐

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

**c.** ○ f and g are not inverses of each other.

○ f and g are inverses of each other.

83. The function $f(x) = x + 18$ is one-to-one.

Find an equation for $f^{-1}(x)$, the inverse function.

$f^{-1}(x) =$ ☐

(Type an expression for the inverse. Use integers or fractions for any numbers in the expression.)

84. The function $f(x) = x^3 - 8$ is one-to-one.

Find an equation for $f^{-1}(x)$, the inverse function.

$f^{-1}(x) =$ ☐

(Type an expression for the inverse. Use integers or fractions for any numbers in the expression.)

85. If the function is one-to-one, find its inverse.

$g(x) = \sqrt{x + 6}$, $x \geq -6$

Is the function one-to-one?

- ○ Yes
- ○ No

Select the correct choice below and fill in any answer boxes within your choice.

- ○ A. $g^{-1}(x) =$ ▢, $x \geq 0$
- ○ B. The function is undefined.

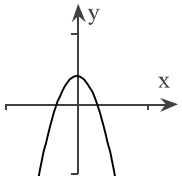
86. The function $f(x) = \frac{17}{x} + 3$ is one-to-one.

Find an equation for $f^{-1}(x)$, the inverse function.

$f^{-1}(x) =$ ▢

(Type an expression for the inverse. Use integers for any numbers in the expression.)

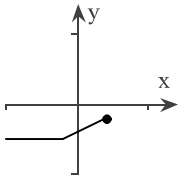
87. Does the graph represent a function that has an inverse?




Choose the correct answer below.

- ○ No
- ○ Yes

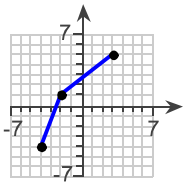
88. Does the graph represent a function that has an inverse?




Choose the correct answer below.

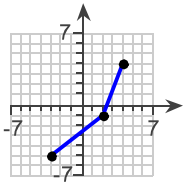
- ○ Yes
- ○ No

89. The graph of a function, f, is shown. Use this graph to draw the graph of its inverse function.

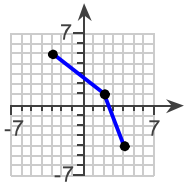



Choose the correct graph of the inverse function $f^{-1}$ below.

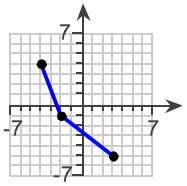
○A.



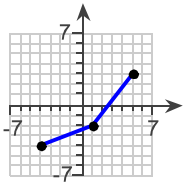

○B.



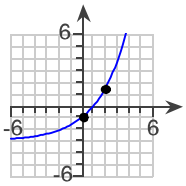

○C.




○D.

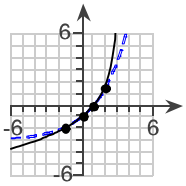



90. Use the graph of f to draw the graph of its inverse function.

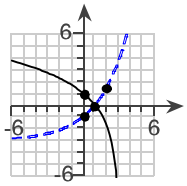



Choose the correct graph of the inverse function $f^{-1}$ below. The graph of f is dashed in each of the choices.

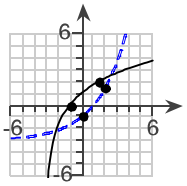
○A.



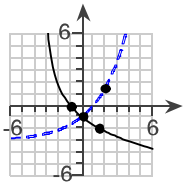

○B.




○C.




○D.



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|---|---|---|
| **Student:** James Cook | **Instructor:** James Cook | **Assignment:** Assignment 2 (covered by Test 2) |
| **Date:** 8/19/11 | **Course:** Math 121, section 3, Fall 2011 | |
| **Time:** 2:42 PM | **Book:** Blitzer: College Algebra, 5e | |

91. Given the function $f(x) = x^2 - 2,\ x \geq 0$,

**(a)** Find $f^{-1}(x)$.
**(b)** Graph f and $f^{-1}$ in the same rectangular coordinate system.
**(c)** Use interval notation to give the domain and the range of f and $f^{-1}$.

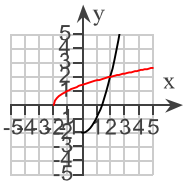
---

**(a)** Find $f^{-1}(x)$.

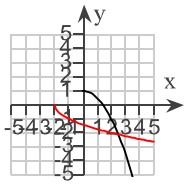
$f^{-1}(x) =$ ☐

**(b)** Choose the correct graph which shows f and $f^{-1}$ graphed in the same coordinate system.

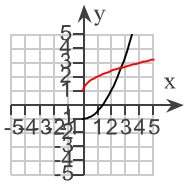
○A.



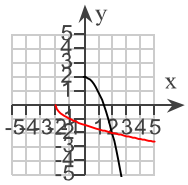

○B.




○C.




○D.




**(c)** State the domain and range of f and $f^{-1}$ using interval notation.

Domain of f = Range of $f^{-1}$ = ☐

Range of f = Domain of $f^{-1}$ = ☐

| | | |
|---|---|---|
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92. Given the function $f(x) = (x-15)^2$, $x \le 15$,

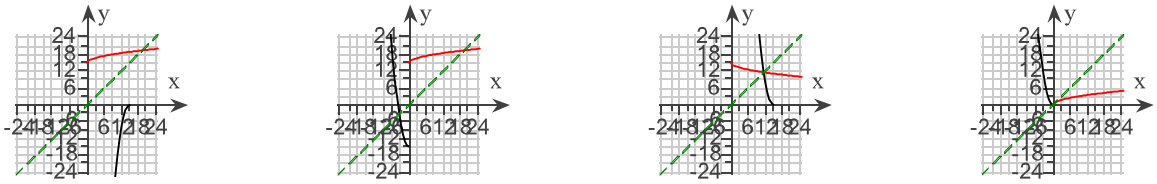
**(a)** Find $f^{-1}(x)$.
**(b)** Graph f and $f^{-1}$ in the same rectangular coordinate system.
**(c)** Use interval notation to give the domain and the range of f and $f^{-1}$.

**(a)** Find $f^{-1}(x)$. Be sure to include any domain restrictions.

$f^{-1}(x) =$ ☐; $x \ge$ ☐

**(b)** Choose the correct graph which shows f and $f^{-1}$ graphed in the same coordinate system.

○A. ○B. ○C. ○D.




**(c)** State the domain and range of f and $f^{-1}$ using interval notation.

Domain of f = Range of $f^{-1}$ = ☐

Range of f = Domain of $f^{-1}$ = ☐

93. The functions f and g are defined by the following tables. Use the tables to evaluate the given composite function.

$f(g(9))$

| x | f(x) |
|---|---|
| 2 | −4 |
| 4 | 0 |
| 5 | 1 |
| −6 | 5 |

| x | g(x) |
|---|---|
| −5 | −5 |
| 2 | −2 |
| 4 | 2 |
| 9 | −6 |

$f(g(9)) =$ ☐

94. The functions f and g are defined by the following tables. Use the tables to evaluate the given composite function.

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

| x | f(x) |
|---|---|
| −2 | 2 |
| 0 | 4 |
| 1 | 5 |
| 3 | −1 |

| x | g(x) |
|---|---|
| −4 | −5 |
| 2 | −3 |
| 6 | 2 |
| 10 | −1 |

$(g \circ f)(-2) =$ ☐

95. The functions f and g are defined by the following tables. Use the tables to evaluate the given composite function.

$f^{-1}(g(8))$

| x | f(x) |
|---|---|
| −4 | 3 |
| 0 | 4 |
| 1 | 5 |
| 3 | −1 |

| x | g(x) |
|---|---|
| −1 | 0 |
| 3 | −2 |
| 6 | 2 |
| 8 | 4 |

$f^{-1}(g(8)) =$ ☐

96. Find the midpoint of the line segment with the given endpoints.

(4,6) and (8,2)

The midpoint of the segment is ☐.
(Type an ordered pair.)

97. Write the standard form of the equation of the circle with the given center and radius.

Center $(-1,0)$, $r = \sqrt{7}$

The equation of the circle in standard form is ☐.
(Simplify your answer.)

98. Give the center and radius of the circle described by the equation and graph the equation. Use the graph to identify the domain and range.

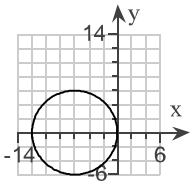
$(x+5)^2 + (y-6)^2 = 36$

The center is ☐. (Type an ordered pair. Simplify your answer.)

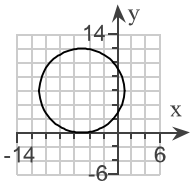
The radius is ☐. (Type an integer or a simplified fraction.)

Choose the correct graph of the circle.

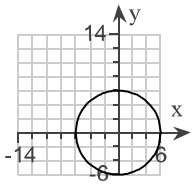
○A.



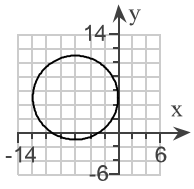

○B.




○C.




○D.




Express the domain of the relation in interval notation.

☐

Express the range of the relation in interval notation.

☐

| | | |
|---|---|---|
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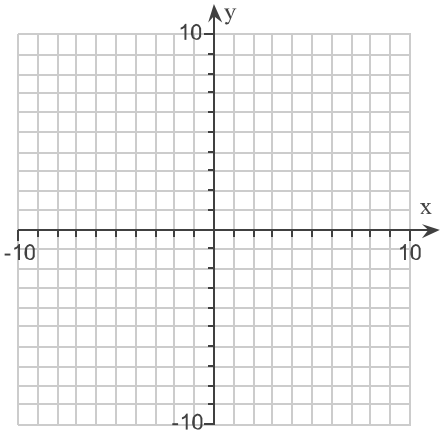
99. Complete the square and write the equation of the circle in standard form. Then determine the center and radius of the circle to graph the equation.

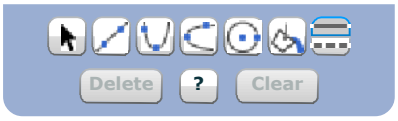
$x^2 + y^2 - 2x - 8y + 16 = 0$

The equation in standard form is ☐.
(Simplify your answer.)

Use the graphing tool to graph the circle.

Click to enlarge graph




100. Complete the square and write the equation of the circle in standard form. Then find the center and radius of the circle and graph the equation.

$x^2 + y^2 + 7x - 4y - 2 = 0$

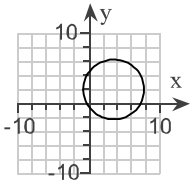
The equation in standard form is ☐. (Simplify your answer.)

The center is ☐. (Type an ordered pair. Simplify your answer.)

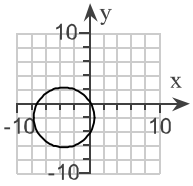
The radius is ☐. (Simplify your answer.)

Choose the correct graph of the circle.

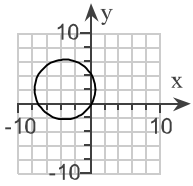
○A.




○B.




○C.




○D.