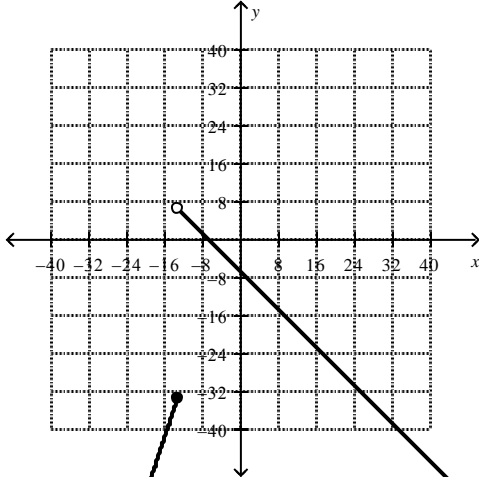


# Piecewise Functions Practice Test

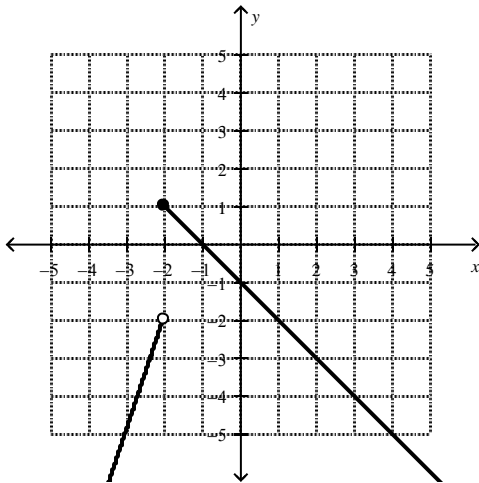
1. Determine the domain of the function shown below.  
Use both set notation and interval notation.



2. Find  $f(14)$  for the function defined by

$$f(x) = \begin{cases} 13x - 4, & x < 15 \\ -3x + 9, & 15 \leq x \leq 19 \\ 6x - 3, & x > 19 \end{cases}$$

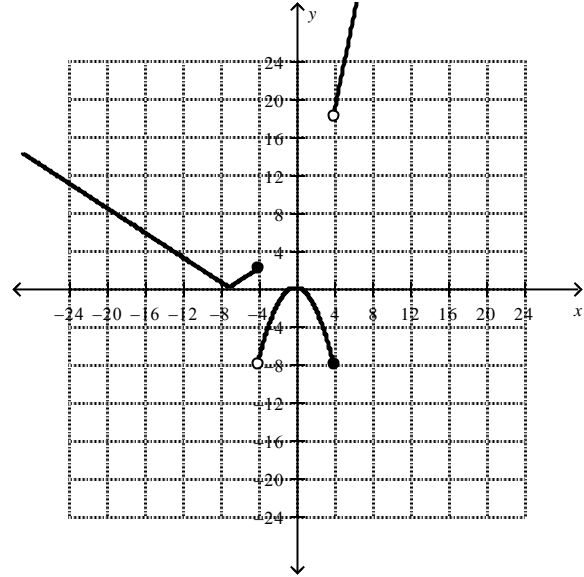
3. Write an equation for the piecewise function graphed below.



4. Find  $f(12)$  for the given piecewise function:

$$f(x) = \begin{cases} -18x + 20, & x < 19 \\ -16x^2, & x \geq 19 \end{cases}$$

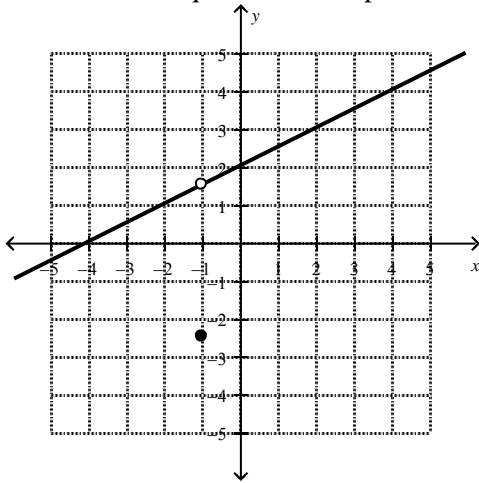
5. Find  $f(-18)$  for the function given below.



6. Is the function continuous at  $x = -17$ ?

$$f(x) = \begin{cases} 20x + 1, & x < -17 \\ -10x^2, & x \geq -17 \end{cases}$$

7. Write an equation for the piecewise function graphed below.



Choices:

$$f(x) = \begin{cases} x + 2, & x < -1 \\ 2x + 2, & x > -1 \end{cases}$$

$$f(x) = \begin{cases} 0.5x + 2, & x < -1 \\ 0.5x + 2, & x > -1 \end{cases}$$

$$f(x) = \begin{cases} 0.5x + 2, & x < -1 \\ -2.5, & x = -1 \\ 0.5x + 2, & x > -1 \end{cases}$$

8. The function  $f$  is defined below. For what value of  $k$ , if any, is  $f$  continuous at  $x = 2$ ?

$$f(x) = \begin{cases} -2x + k, & \text{for } x \leq 2 \\ -9x + 15, & \text{for } x > 2 \end{cases}$$

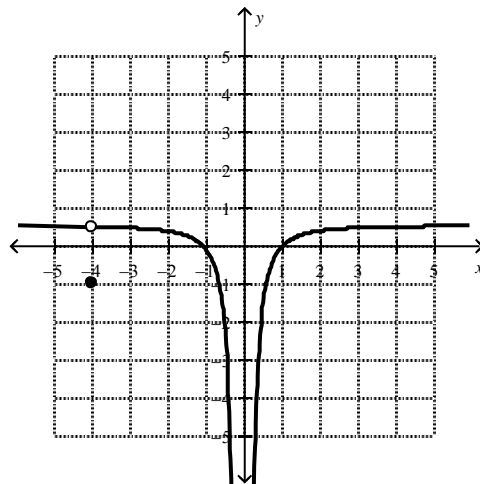
9. Find  $f(6)$  for the function defined by

$$f(x) = \begin{cases} 10, & x < -4 \\ 16, & -4 \leq x \leq 9 \\ -13, & x > 9 \end{cases}$$

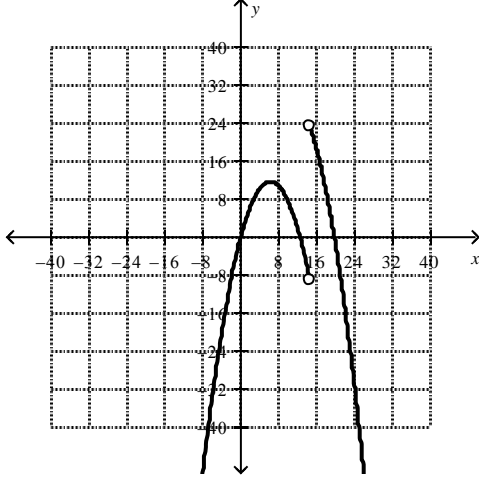
10. Find  $f(3)$  for the function defined by

$$f(x) = \begin{cases} -11x^2 + 11x, & x < 12 \\ -12x - 4, & x = 12 \\ -19, & x > 12 \end{cases}$$

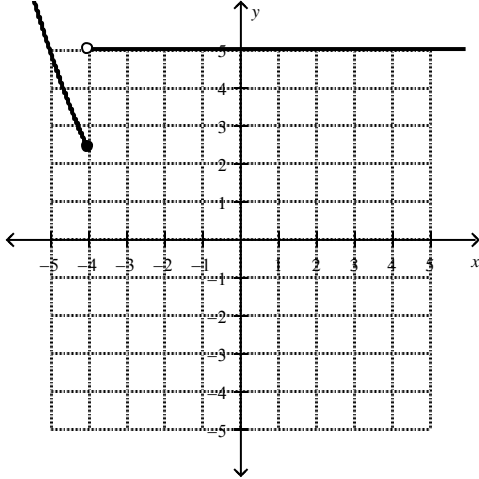
11. Find  $f(-4)$  for the function given below.



12. Determine the domain of the function shown below. Use both set notation and interval notation.



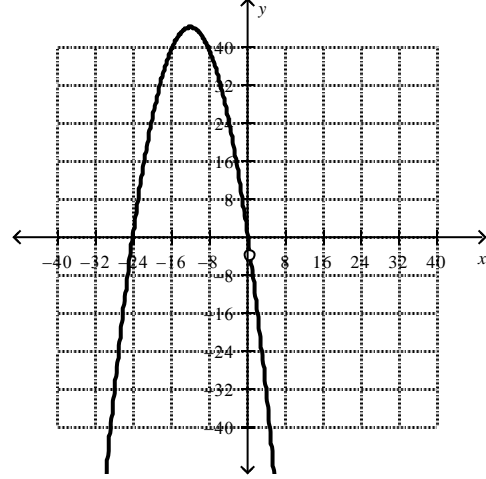
13. Find  $f(-5)$  for the function given below.



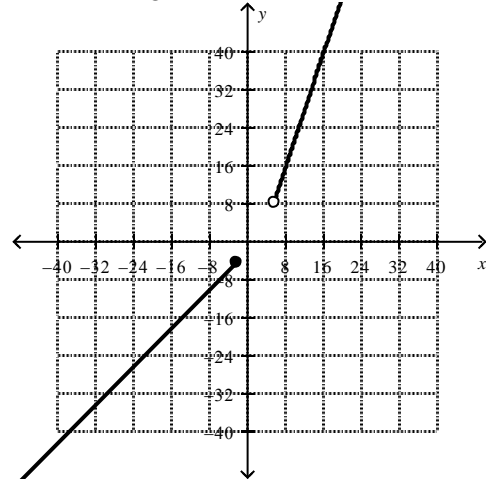
14. Find  $f(-19)$  for the given piecewise function:

$$f(x) = \begin{cases} -7x^{-3} - 9, & x < -19 \\ -2x, & x \geq -19 \end{cases}$$

15. Determine the domain of the function shown below. Use both set notation and interval notation.



16. Determine the domain of the function shown below using both set notation and interval notation.



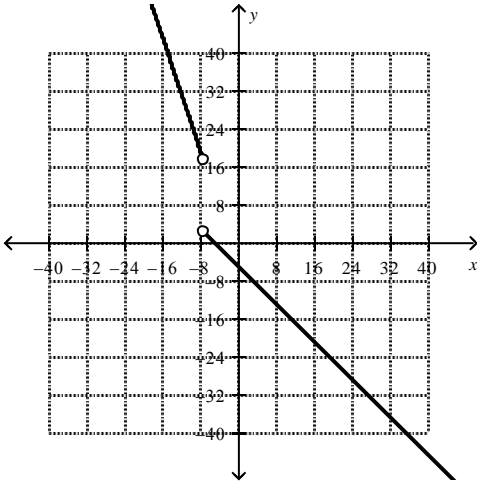
17. Find  $f(-13)$  for the given piecewise function:

$$f(x) = \begin{cases} 4x^2 + 3, & x \leq -11 \\ 16, & x > -11 \end{cases}$$

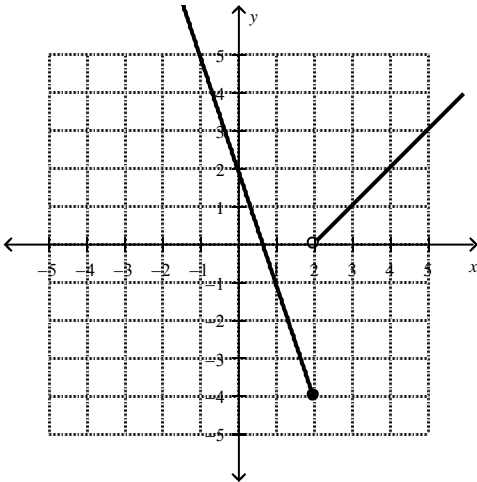
18. The function  $f$  is defined below. For what value of  $k$ , if any, is  $f$  continuous at  $x = 3$ ?

$$f(x) = \begin{cases} -16x - k, & \text{for } x \leq 3 \\ 20x - 9, & \text{for } x > 3 \end{cases}$$

19. Determine the domain of the function shown below. Use both set notation and interval notation.



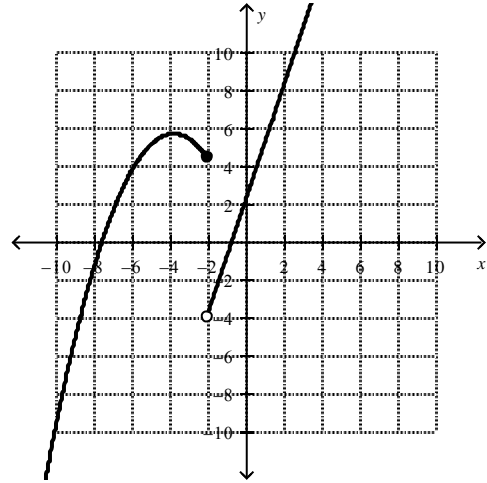
20. Write an equation for the piecewise function graphed below.



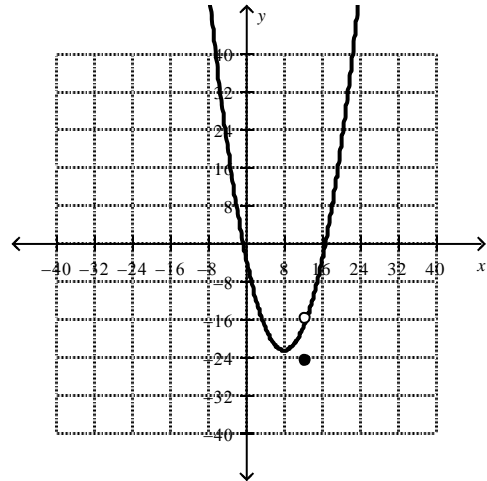
21. Is this function continuous?

$$f(x) = \begin{cases} 16 + x^2, & x < 13 \\ 7x - 15, & x \geq 13 \end{cases}$$

22. Find  $f(-2)$  for the function given below.



23. Determine the domain of the function shown below. Use both set notation and interval notation.



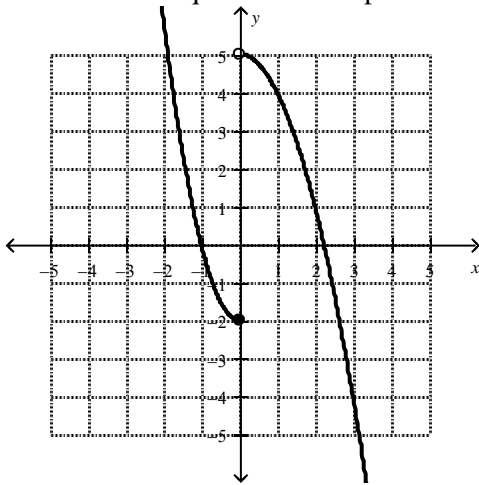
24. Find  $f(-4)$  for the given piecewise function:

$$f(x) = \begin{cases} 5x - 9, & x \leq 6 \\ -10, & x > 6 \end{cases}$$

25. Find  $f(-3)$  for the function defined by

$$f(x) = \begin{cases} 2x + 3, & x < 4 \\ 3x + 9, & x = 4 \\ x + 3, & x > 4 \end{cases}$$

26. Write an equation for the piecewise function graphed below.



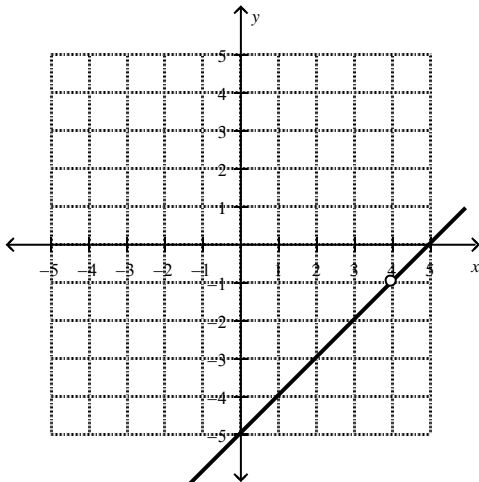
Choices:

$$f(x) = \begin{cases} 2x^2 + 5, & x \leq 0 \\ -x^2 - 2, & x > 0 \end{cases}$$

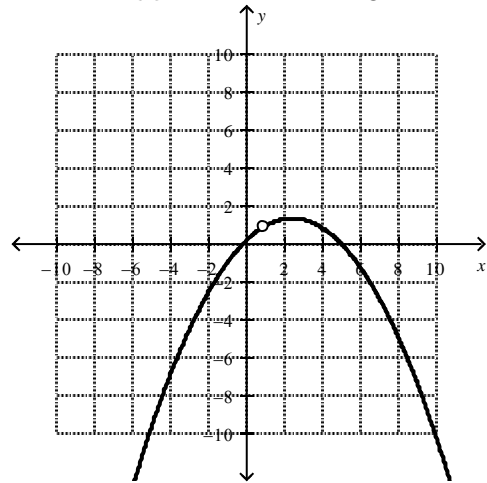
$$f(x) = \begin{cases} 2x^2 + 2, & x < 0 \\ -x^2 - 5, & x \geq 0 \end{cases}$$

$$f(x) = \begin{cases} 2x^2 - 2, & x \leq 0 \\ -x^2 + 5, & x > 0 \end{cases}$$

27. Write an equation for the piecewise function graphed below.



28. Find  $f(1)$  for the function given below.



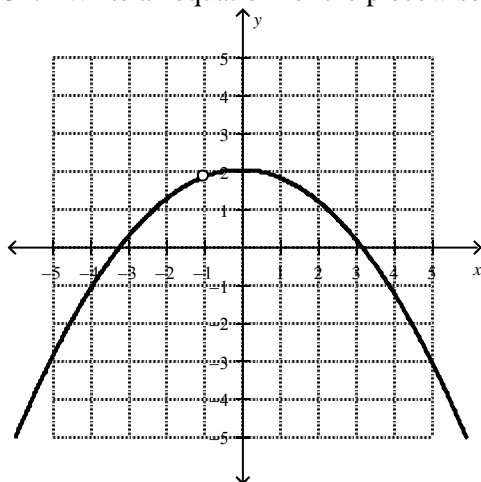
29. Graph the following piecewise function.

$$f(x) = \begin{cases} 2x + 4, & x < -10 \\ 2x + 5, & x \geq -10 \end{cases}$$

30. Is this function continuous?

$$f(x) = \begin{cases} -17x^2 + 4, & x \leq 0 \\ 10, & x > 0 \end{cases}$$

31. Write an equation for the piecewise function graphed below.



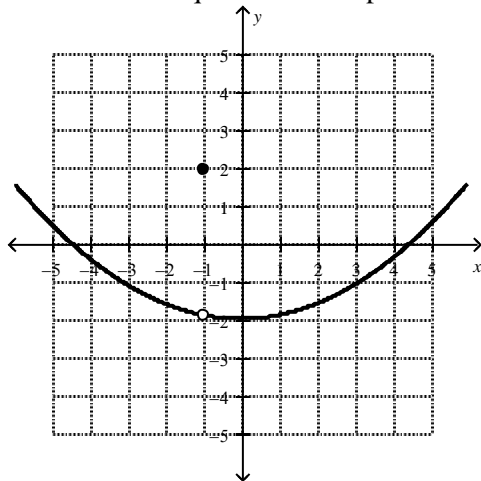
Choices:

$$f(x) = \begin{cases} -0.2x^2 + 2, & x < -1 \\ -0.2x^2 + 2, & x > -1 \end{cases}$$

$$f(x) = -0.2x^2 + 2$$

$$f(x) = \begin{cases} -0.2x^2 + 2, & x \leq -1 \\ -0.2x^2 + 2, & x > -1 \end{cases}$$

32. Write an equation for the piecewise function graphed below.



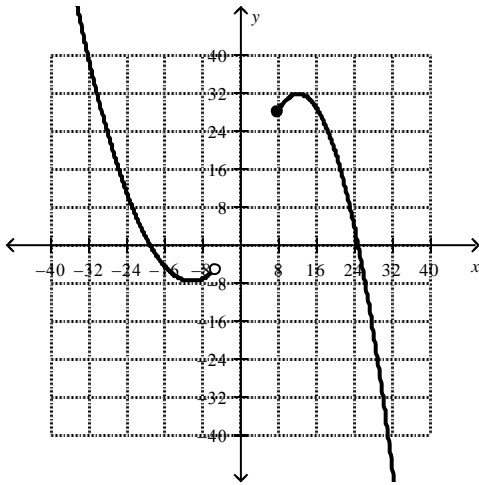
Choices:

$$f(x) = \begin{cases} 0.1x^2 - 2, & x < -1 \\ 0.1x^2 - 2, & x > -1 \end{cases}$$

$$f(x) = \begin{cases} 0.1x^2 - 2, & x < -1 \\ 1.9, & x = -1 \\ 0.1x^2 - 2, & x > -1 \end{cases}$$

$$f(x) = \begin{cases} -2x^2 - 2, & x < -1 \\ 5x^2 - 2, & x > -1 \end{cases}$$

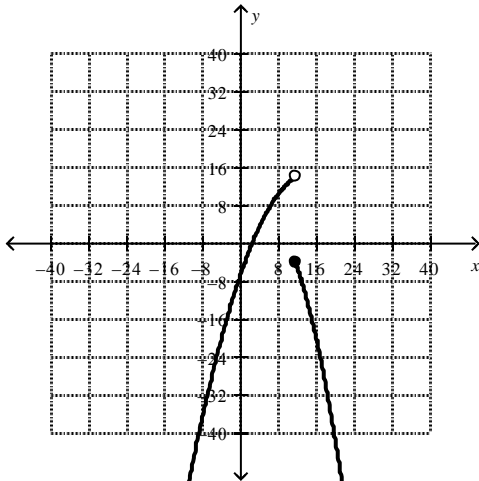
33. Determine the domain of the function shown below. Use both set notation and interval notation.



34. Is the function continuous at  $x = -17$ ?

$$f(x) = \begin{cases} -16x + 14, & x < -13 \\ -16x^2, & x \geq -13 \end{cases}$$

35. Determine the domain of the function shown below. Use both set notation and interval notation.



36. Graph the following piecewise function.

$$f(x) = \begin{cases} \sin(x), & x < -4 \\ \cos(x), & x \geq -4 \end{cases}$$

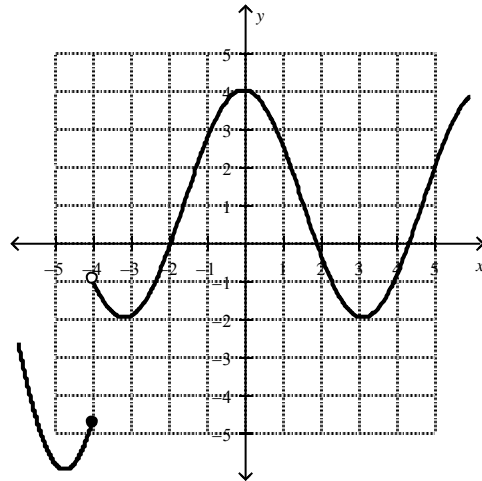
37. Find  $f(4)$  for the given piecewise function:

$$f(x) = \begin{cases} -2x + 10, & x < 4 \\ -7x^2, & x \geq 4 \end{cases}$$

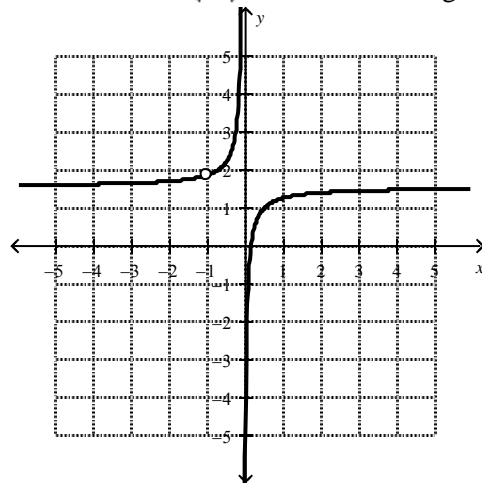
38. The function  $f$  is defined below. For what value of  $k$ , if any, is  $f$  continuous at  $x = -7$ ? Do not use a calculator.

$$f(x) = \begin{cases} x^2 - 12x + 16, & \text{for } x \leq -7 \\ kx + 268, & \text{for } x > -7 \end{cases}$$

39. Find  $f(-3)$  for the function given below.



40. Find  $f(-1)$  for the function given below.



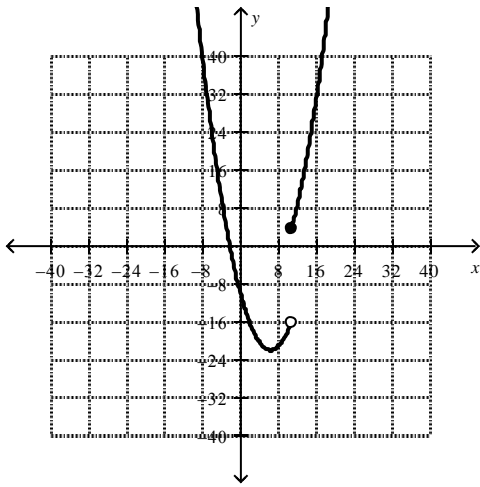
41. Is this function continuous?

$$f(x) = \begin{cases} x^2 - 9, & x \leq -3 \\ 0, & x > -3 \end{cases}$$

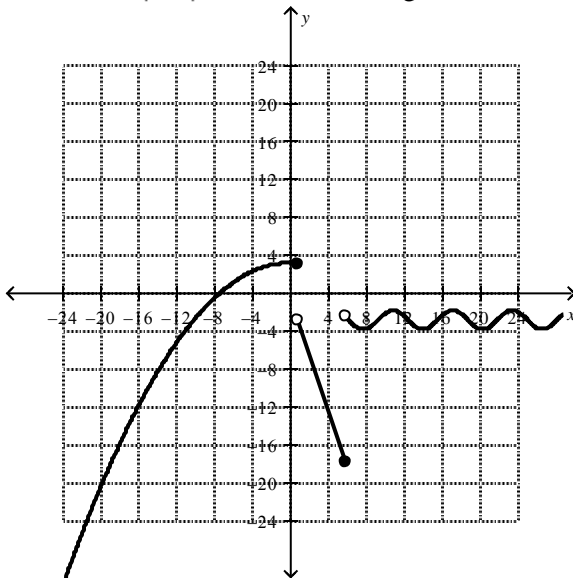
42. Is this function continuous?

$$f(x) = \begin{cases} 2x - 13, & x \leq -9 \\ -8, & x > -9 \end{cases}$$

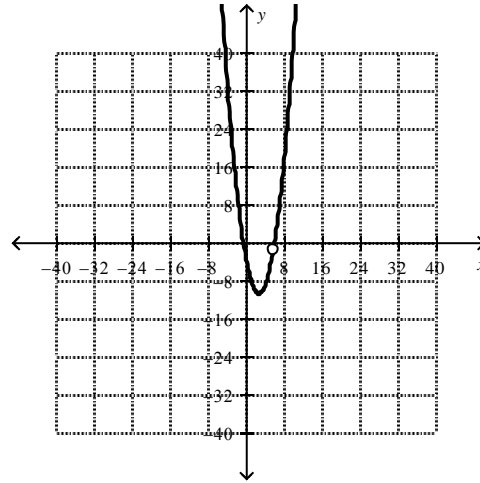
43. Determine the domain of the function shown below. Use both set notation and interval notation.



44. Find  $f(-17)$  for the function given below.



45. Determine the domain of the function shown below. Use both set notation and interval notation.



46. The function  $f$  is defined below. For what value of  $k$ , if any, is  $f$  continuous at  $x = 6$ ?

$$f(x) = \begin{cases} 15x^2 + 7x + 5, & \text{for } x \leq 6 \\ kx - 3, & \text{for } x > 6 \end{cases}$$



# Piecewise Functions Practice Test

## Answer Section

1. All Real Numbers

2. 178

$$3. f(x) = \begin{cases} 3x + 4, & x < -2 \\ -x - 1, & x \geq -2 \end{cases}$$

4. -196

5. 7.15

6. No

7. C

8. 1

9. 16

10. -66

11. -1

12.  $\{x \in \mathbb{R} \mid x \neq 15\}$

13. 5

14. 38

15.  $\{x \in \mathbb{R} \mid x \neq 1\}$

16.  $[-\infty, -2] \cup (6, \infty)$

$\{x \in \mathbb{R} \mid x \leq -2 \cup x > 6\}$

17. 679

18. -99

19.  $\{x \in \mathbb{R} \mid x \neq -7\}$

$$20. f(x) = \begin{cases} -3x + 2, & x \leq 2 \\ x - 2, & x > 2 \end{cases}$$

21. No

22. 4.4

23.  $\{x \mid x \in \mathbb{R}\}$

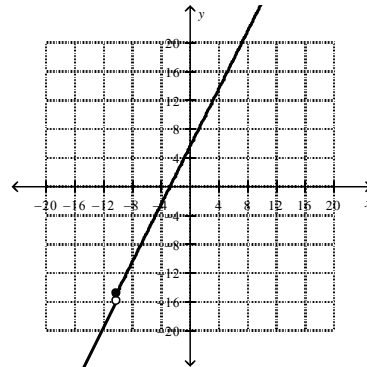
24. -29

25. -3

26. D

$$27. f(x) = \begin{cases} x - 5, & x < 4 \\ x - 5, & x > 4 \end{cases}$$

28.  $f(1)$  is undefined



29.

30. No

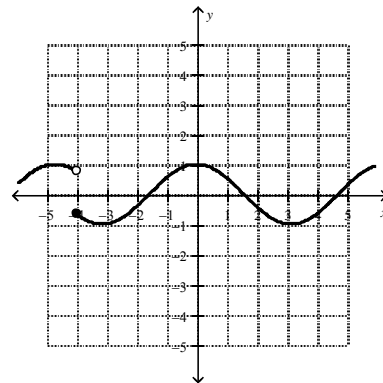
31. C

32. C

33.  $(-\infty, -5) \cup [8, \infty)$

34. Yes

35.  $(-\infty, 12) \cup [12, \infty)$



36.

37. -112

38. 17

39. -1.97

40.  $f(-1)$  is undefined

41. Yes

42. No

43. All real numbers

44. -14.34

45.  $(-\infty, 6) \cup (6, \infty)$

46. 98.333