

Practice and Apply

Graph each piecewise function.

$$16. f(x) = \begin{cases} x + 1 & \text{if } 0 \leq x < 5 \\ 2x - 4 & \text{if } 5 \leq x < 10 \end{cases}$$

$$17. g(x) = \begin{cases} 3x - 4 & \text{if } 0 \leq x < 6 \\ 20 - x & \text{if } 6 \leq x < 12 \end{cases}$$

$$18. m(x) = \begin{cases} 20 & \text{if } 0 \leq x < 10 \\ \frac{x}{2} + 15 & \text{if } 10 \leq x < 20 \end{cases}$$

$$19. f(x) = \begin{cases} 4x & \text{if } 0 \leq x < 2 \\ -2x + 10 & \text{if } 2 \leq x < 5 \\ 2 & \text{if } 5 \leq x < 10 \end{cases}$$

$$20. h(x) = \begin{cases} -2 & \text{if } x < 0 \\ x + 1 & \text{if } 0 \leq x \leq 10 \\ -\frac{1}{2}x + 16 & \text{if } x > 10 \end{cases}$$

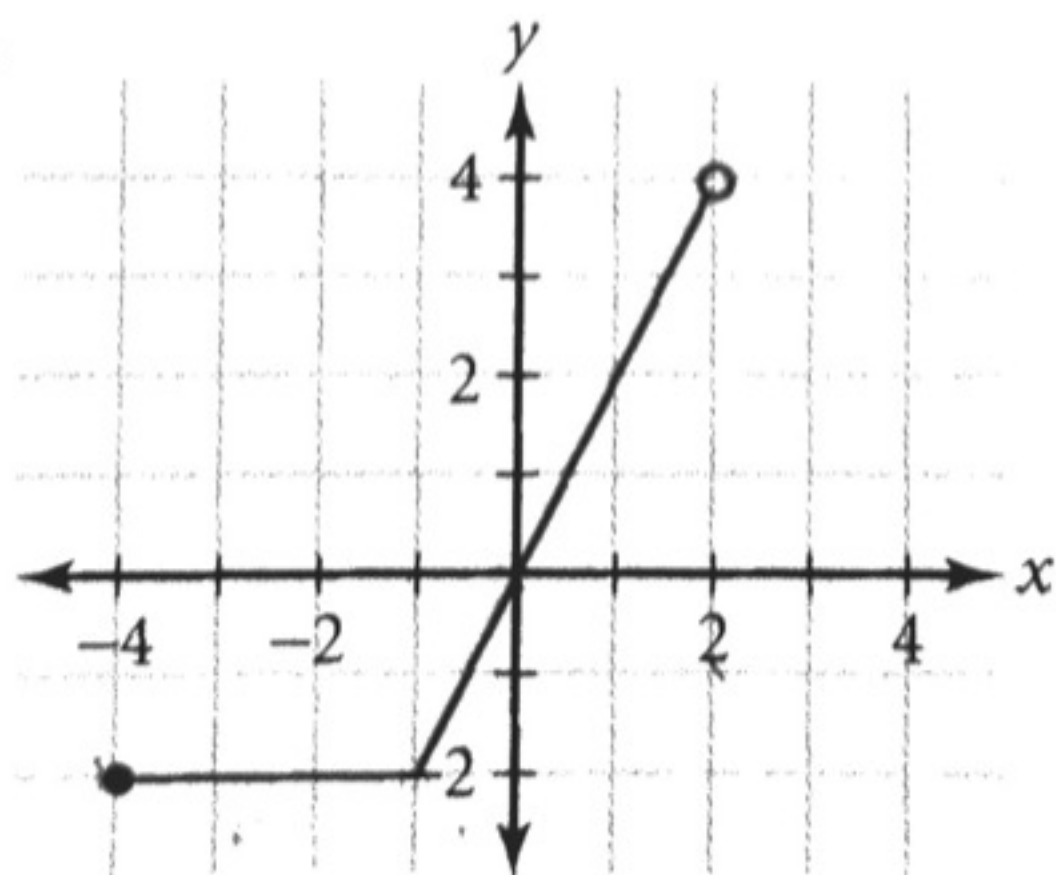
$$21. b(x) = \begin{cases} 2 & \text{if } x < 1 \\ 2x & \text{if } 1 \leq x \leq 3 \\ 7 - \frac{1}{3}x & \text{if } x > 3 \end{cases}$$

$$22. k(x) = \begin{cases} 2x + 3 & \text{if } x < 4 \\ x - 1 & \text{if } 4 \leq x \leq 9 \end{cases}$$

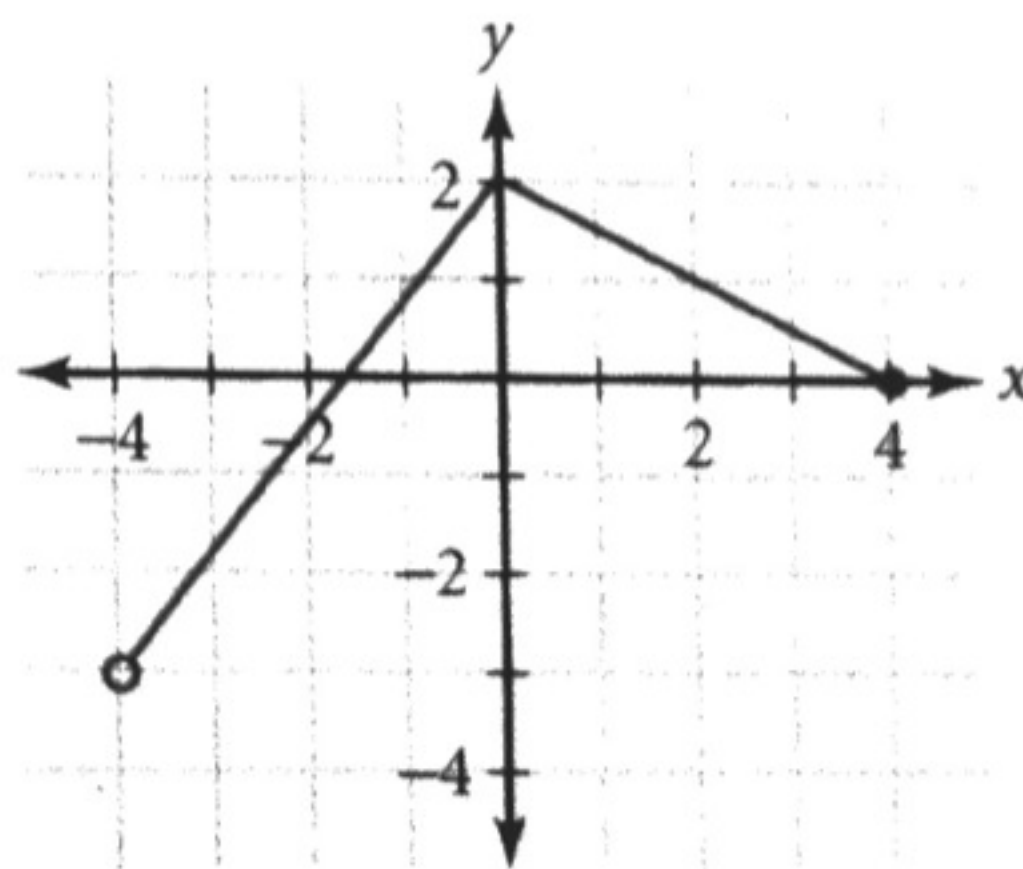
$$23. f(x) = \begin{cases} 5 - x & \text{if } x < 2 \\ x - 1 & \text{if } 2 \leq x \leq 10 \end{cases}$$

Write the piecewise function represented by each graph.

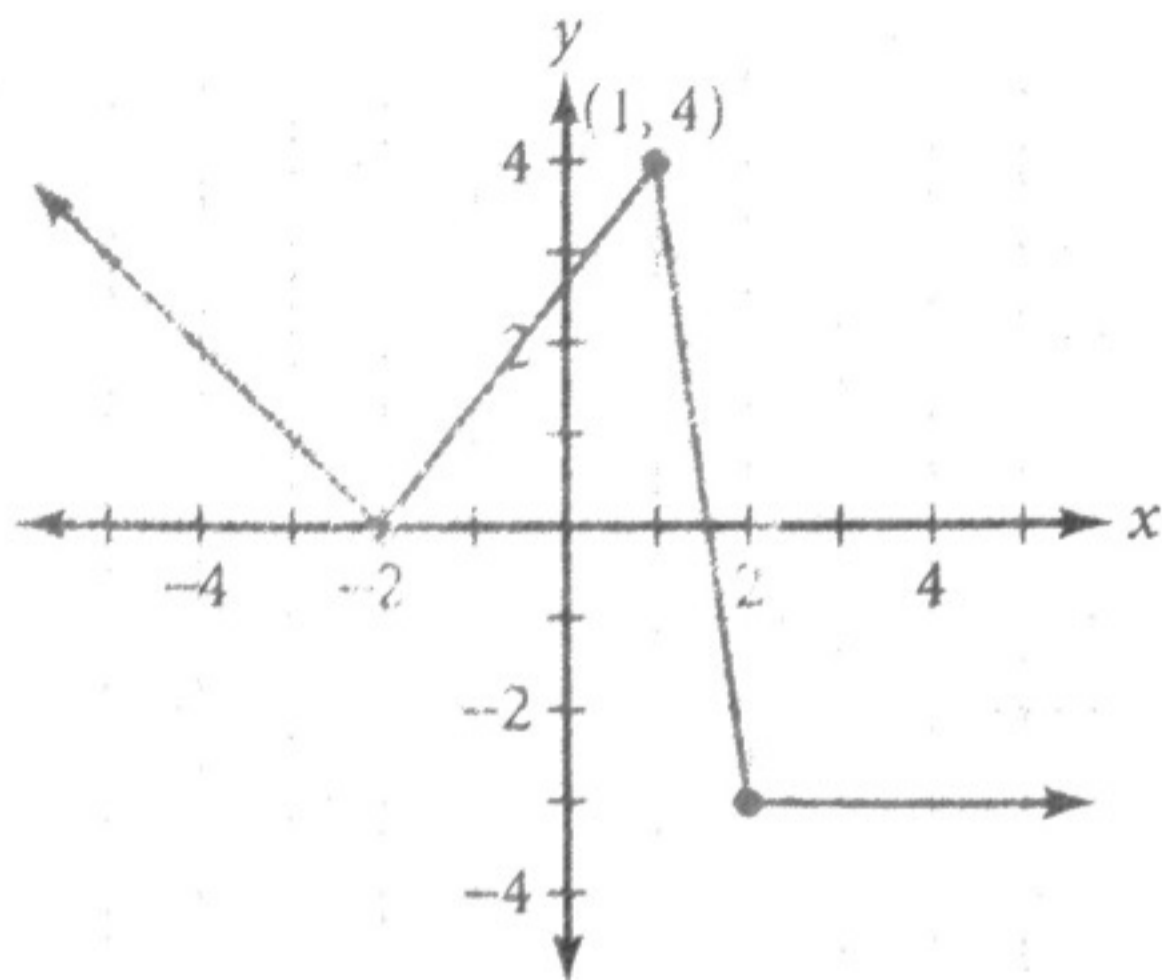
24.



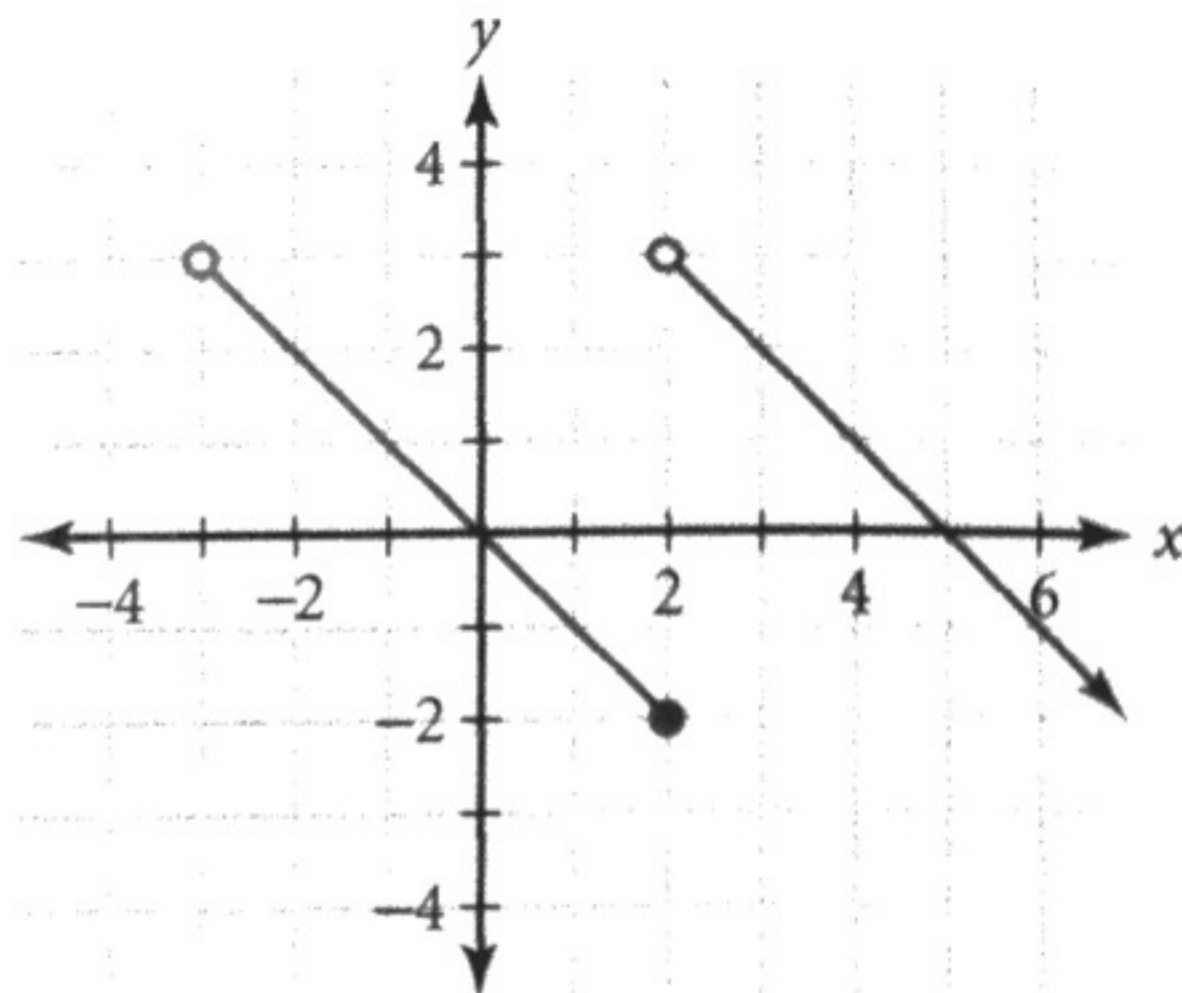
25.



26.



27.

**Evaluate.**

28. $\lceil 3.9 \rceil$

31. $\lceil -6.105 \rceil$

34. $\lceil -4.1 \rceil - \lceil -3.25 \rceil$

37. $\lceil -2.99 \rceil + \lceil 2.99 \rceil$

40. $\lceil -2.3 \rceil - \lceil 5.6 \rceil$

43. $\lceil -8.99 \rceil - \lceil -5.1 \rceil$

46. $\lceil 4 \rceil - \lceil -5 \rceil$

49. $-\lceil -1 \rceil - \lceil 1 \rceil$

29. $\lfloor -6.105 \rfloor$

32. $\lfloor -4.1 \rfloor - \lfloor -3.25 \rfloor$

35. $\lfloor 5.1 \rfloor + \lfloor -2.01 \rfloor$

38. $\lfloor -5.1 \rfloor - \lfloor 5.1 \rfloor$

41. $-\lfloor 0.9 \rfloor + \lfloor -8.7 \rfloor$

44. $-\lfloor 0.25 \rfloor - \lfloor 0.25 \rfloor$

47. $\lfloor -7 \rfloor - \lfloor 2.2 \rfloor$

50. $\lfloor -1 \rfloor - \lfloor 3 \rfloor$

30. $\lceil 3.9 \rceil$

33. $\lceil 5.1 \rceil + \lceil -2.01 \rceil$

36. $\lceil -2.5 \rceil + \lceil 1.999 \rceil$

39. $\lceil -2.5 \rceil - \lceil 1.999 \rceil$

42. $\lceil 6.2 \rceil - \lceil -4.7 \rceil$

45. $\lceil 2.75 \rceil - \lceil 2.75 \rceil$

48. $\lceil 3 \rceil + \lceil -4 \rceil$

51. $\lceil 6 \rceil - \lceil -2.67 \rceil$

Graph each function.

52. $f(x) = 2\lceil x \rceil$

55. $g(x) = \lceil x \rceil - 3$

53. $f(x) = 3\lceil x \rceil$

56. $g(x) = 2 - \lceil x \rceil$

54. $g(x) = \lceil x \rceil + 3$

57. $h(x) = 4 + \lceil x \rceil$

Graph each function and its inverse together on a coordinate plane.

58. $f(x) = 4|x| - 1$

59. $g(x) = \frac{1}{2}|x|$

60. $h(x) = 5|x| + 10$