

2.6: Piecewise Functions

Evaluate the function for the given value of x.

$$f(x) = \begin{cases} 3, & \text{if } x \leq 0 \\ 2, & \text{if } x > 0 \end{cases}$$

$$g(x) = \begin{cases} x + 5, & \text{if } x \leq 3 \\ 2x - 1, & \text{if } x > 3 \end{cases}$$

$$h(x) = \begin{cases} \frac{1}{2}x - 4, & \text{if } x \leq -2 \\ 3 - 2x, & \text{if } x > -2 \end{cases}$$

1. $f(2)$

2. $f(-4)$

3. $f(0)$

4. $f\left(\frac{1}{2}\right)$

5. $g(7)$

6. $g(0)$

7. $g(-1)$

8. $g(3)$

9. $h(-4)$

10. $h(-2)$

11. $h(-1)$

12. $h(6)$

Match the piecewise function with its graph.

13. $f(x) = \begin{cases} x - 4, & \text{if } x \leq 1 \\ 3x, & \text{if } x > 1 \end{cases}$

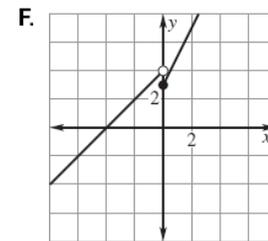
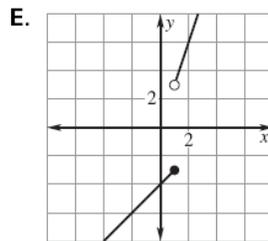
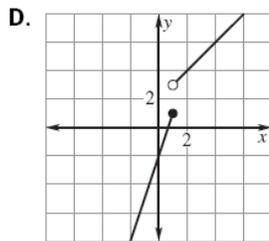
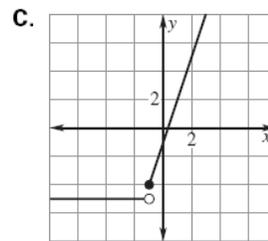
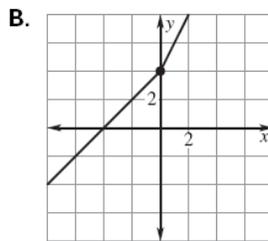
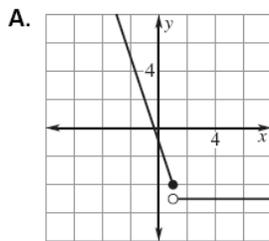
14. $f(x) = \begin{cases} x + 4, & \text{if } x \leq 0 \\ 2x + 4, & \text{if } x > 0 \end{cases}$

15. $f(x) = \begin{cases} 3x - 2, & \text{if } x \leq 1 \\ x + 2, & \text{if } x > 1 \end{cases}$

16. $f(x) = \begin{cases} 2x + 3, & \text{if } x \geq 0 \\ x + 4, & \text{if } x < 0 \end{cases}$

17. $f(x) = \begin{cases} 3x - 1, & \text{if } x \geq -1 \\ -5, & \text{if } x < -1 \end{cases}$

18. $f(x) = \begin{cases} -3x - 1, & \text{if } x \leq 1 \\ -5, & \text{if } x > 1 \end{cases}$



Graph the function.

19.

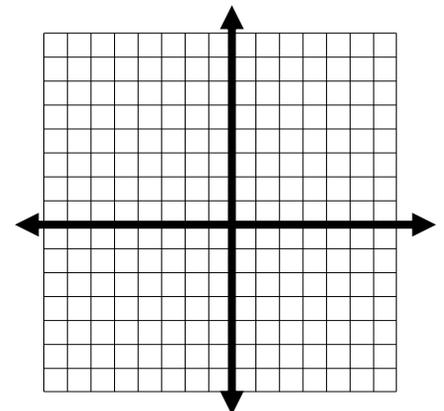
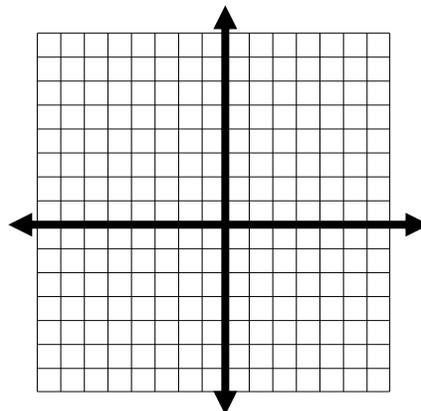
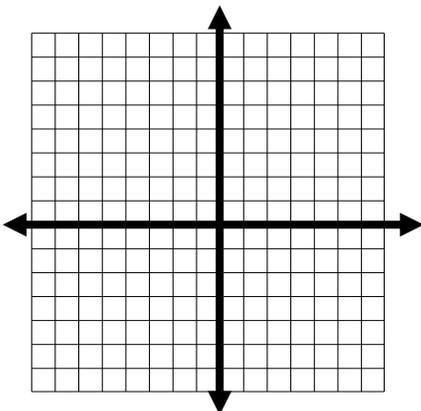
$$f(x) = \begin{cases} x + 1, & x < -2 \\ \frac{1}{2}x, & x \geq -2 \end{cases}$$

20.

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

21.

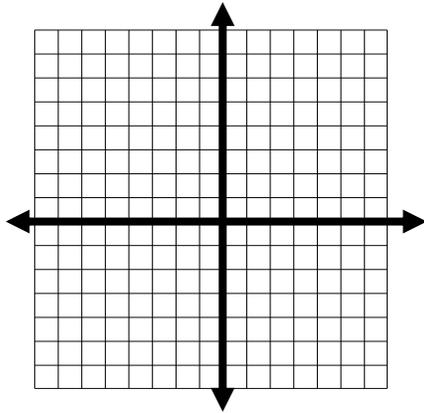
$$f(x) = \begin{cases} x + 1 & \text{if } x < 1 \\ -x + 1 & \text{if } 1 \leq x < 3 \\ x - 1 & \text{if } x \geq 3 \end{cases}$$



Graph the function.

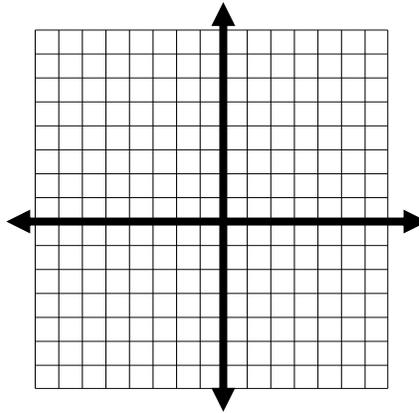
22.

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



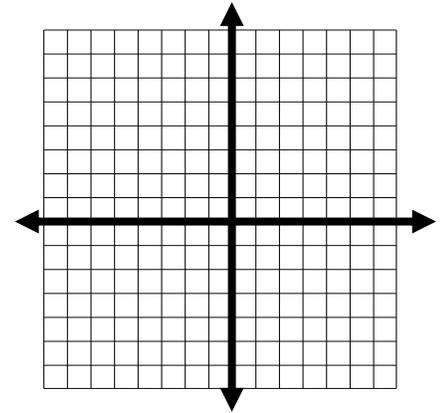
23.

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



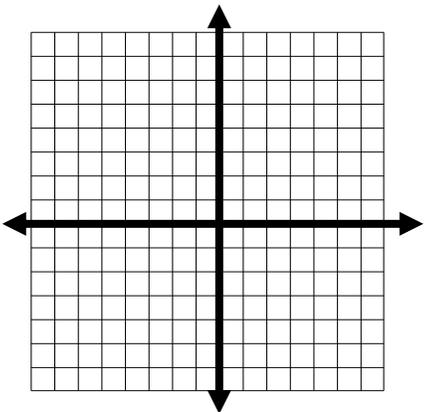
24.

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



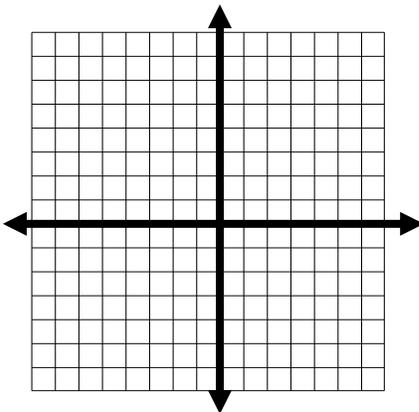
25.

$$f(x) = \begin{cases} x+1 & \text{if } x < 1 \\ -x+1 & \text{if } 1 \leq x < 3 \\ x-1 & \text{if } x \geq 3 \end{cases}$$



26.

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



27.

$$f(x) = \begin{cases} 5 & \text{if } x < 0 \\ -\frac{1}{2}x+2 & \text{if } 0 \leq x \leq 2 \\ 1 & \text{if } x > 2 \end{cases}$$

