

## Worksheet: Piecewise Functions

Evaluate the function for the given value of  $x$ . Show all work.

1. 
$$f(x) = \begin{cases} x+5 & x < -2 \\ x^2 + 2x + 3 & x \geq -2 \end{cases} \quad f(3) = \underline{18} \quad f(-4) = \underline{1} \quad f(-2) = \underline{3}$$

2. 
$$f(x) = \begin{cases} 2x+1 & x \geq 1 \\ x^2 + 3 & x < 1 \end{cases} \quad f(-2) = \underline{7} \quad f(6) = \underline{13} \quad f(1) = \underline{\cancel{5}3}$$

Match the piecewise function with its graph.

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

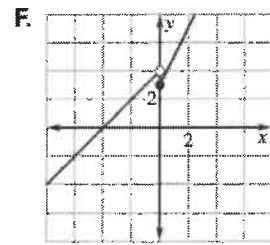
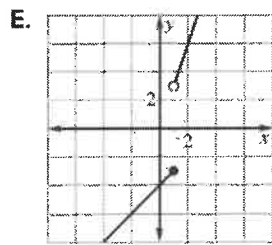
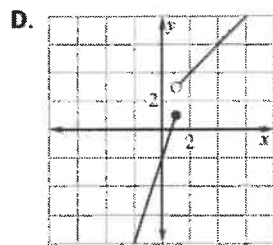
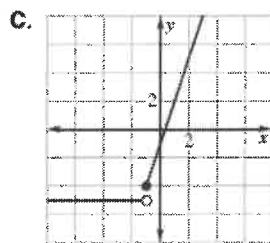
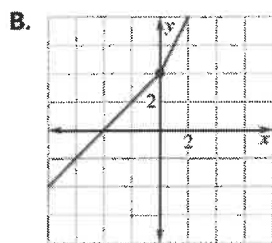
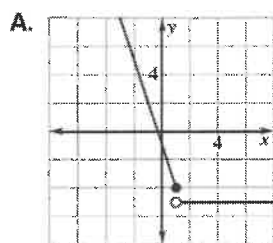
4. 
$$f(x) = \begin{cases} x+4, & \text{if } x \leq 0 \\ 2x+4, & \text{if } x > 0 \end{cases}$$

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

6. 
$$f(x) = \begin{cases} 2x+3, & \text{if } x \geq 0 \\ x+4, & \text{if } x < 0 \end{cases}$$

7. 
$$f(x) = \begin{cases} 3x-1, & \text{if } x \geq -1 \\ -5, & \text{if } x < -1 \end{cases}$$

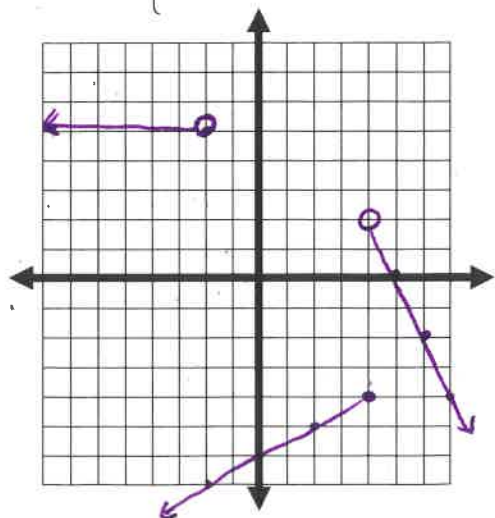
8. 
$$f(x) = \begin{cases} -3x-1, & \text{if } x \leq 1 \\ -5, & \text{if } x > 1 \end{cases}$$



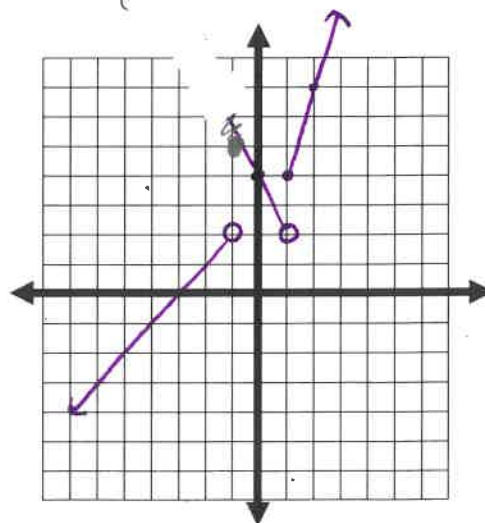
3E  
4B  
5D  
6F  
7C  
8A

Carefully graph each function.

9. 
$$f(x) = \begin{cases} 5 & \text{if } x < -2 \\ \frac{1}{2}x - 6 & \text{if } -2 \leq x \leq 4 \\ -2x + 10 & \text{if } x > 4 \end{cases}$$

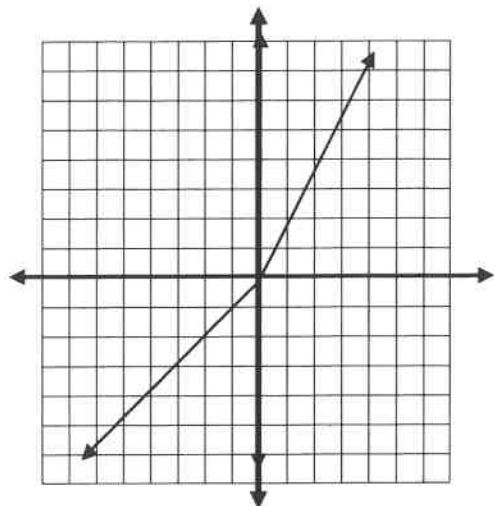


10. 
$$f(x) = \begin{cases} x+3 & \text{if } x < -1 \\ -2x+4 & \text{if } -1 \leq x < 1 \\ 3x+1 & \text{if } x \geq 1 \end{cases}$$



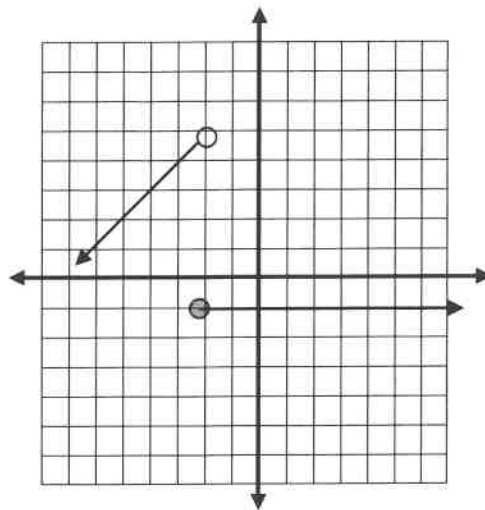
Write equations for the piecewise functions whose graphs are shown below. Assume that the units are 1 for every tic mark.

11.



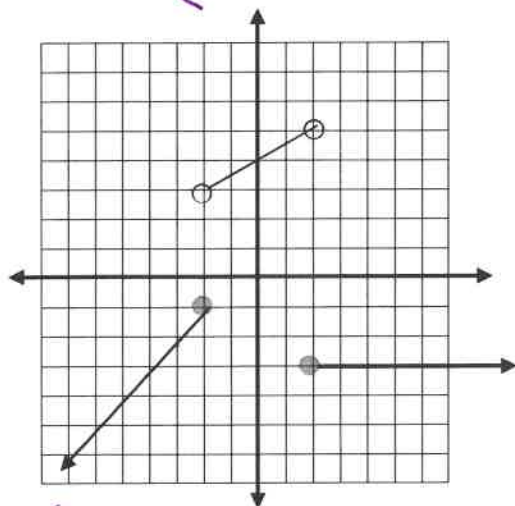
$$f(x) = \begin{cases} x & \text{if } x < 0 \\ 2x & \text{if } x \geq 0 \end{cases}$$

12.



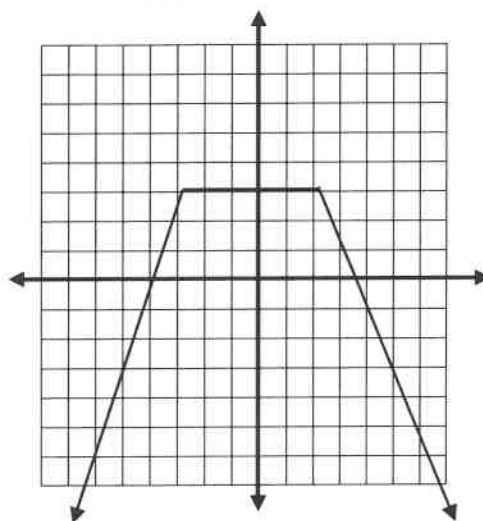
$$f(x) = \begin{cases} x+7 & \text{if } x < -2 \\ -1 & \text{if } x \geq -2 \end{cases}$$

13.



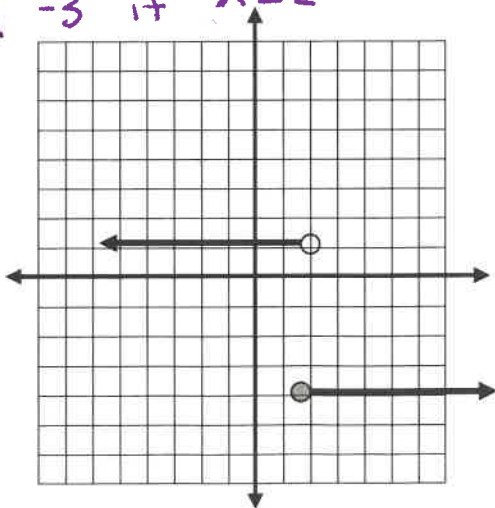
$$f(x) = \begin{cases} x+1 & \text{if } x \leq -2 \\ \frac{1}{2}x+4 & \text{if } -2 < x < 2 \\ -3 & \text{if } x \geq 2 \end{cases}$$

14.



$$f(x) = \begin{cases} 3x+12 & \text{if } x \leq -3 \\ 3 & \text{if } -3 < x < 2 \\ -2x+7 & \text{if } x \geq 2 \end{cases}$$

15.



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