

Piecewise Functions WS

Review

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. $f(2) = 2$

2. $f(-4) = 3$

3. $f(0) = 3$

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

5. $g(7) = 13$

6. $g(0) = 5$

7. $g(-1) = 4$

8. $g(3) = 8$

9. $h(-4) = -6$

10. $h(-2) = -5$

11. $h(-1) = 5$

12. $h(6) = -9$

Match the piecewise function with its graph.

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

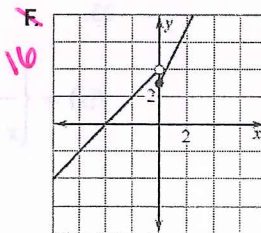
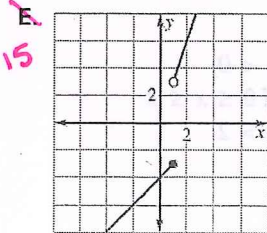
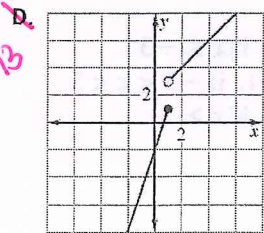
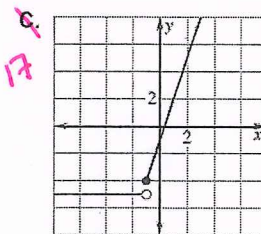
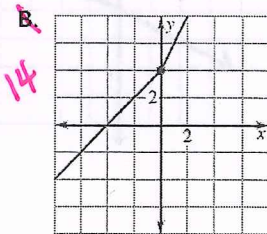
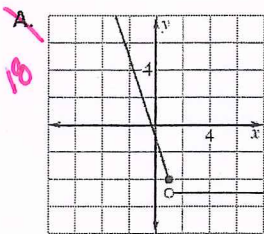
B
14. $f(x) = \begin{cases} x + 4, & \text{if } x \leq 0 \\ 2x + 4, & \text{if } x > 0 \end{cases}$

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

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

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

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



Carefully graph each of the following. Identify whether or not the graph is a function. Then, evaluate the graph at any specified domain value. You may use your calculators to help you graph, but you must sketch it carefully on the grid!

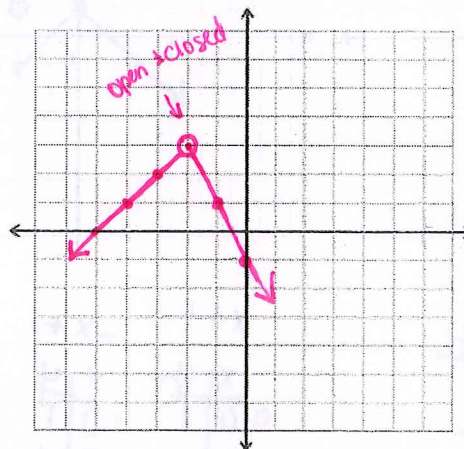
19. $f(x) = \begin{cases} x + 5 & x < -2 \\ -2x - 1 & x \geq -2 \end{cases}$

Function? Yes or No

$f(3) = -7$

$f(-4) = 1$

$f(-2) = 3$



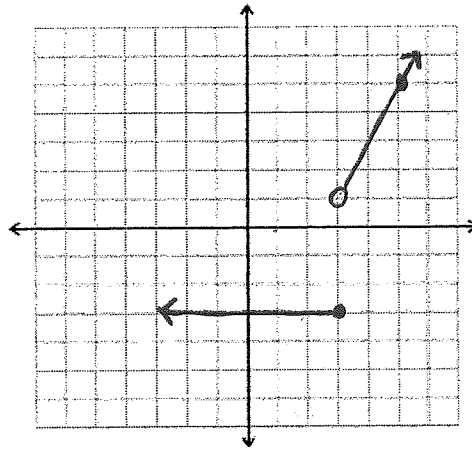
20. $f(x) = \begin{cases} -3 & x \leq 3 \\ 2x-5 & x > 3 \end{cases}$ *RAY*
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Function? Yes or No

$f(-4) =$

$f(0) =$

$f(3) =$



$$\begin{array}{r|l} 2x-5 & \\ \hline x & y \\ 3 & -4 \\ 5 & 2 \end{array}$$

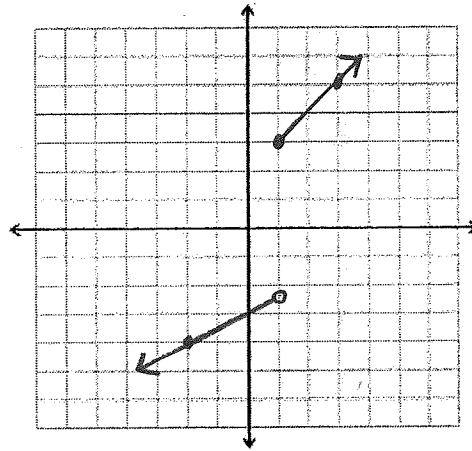
21. $f(x) = \begin{cases} 2x+1 & x \geq 1 \\ \frac{x}{2}-3 & x < 1 \end{cases}$

Function? Yes or No

$f(-2) =$

$f(6) =$

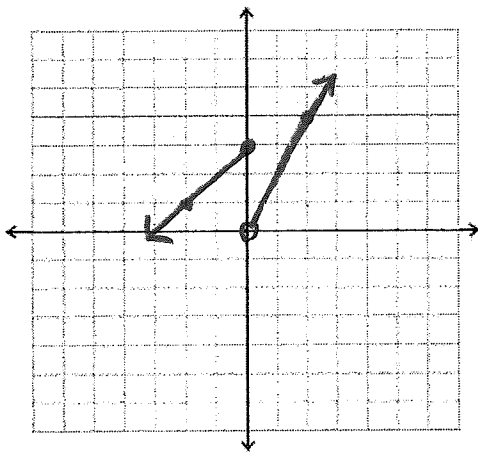
$f(1) =$



$$\begin{array}{r|l} 2x+1 & \\ \hline x & y \\ 1 & 3 \\ 3 & 7 \end{array} \quad \begin{array}{r|l} \frac{x}{2}-3 & \\ \hline x & y \\ 0 & -3 \\ -2 & -4 \end{array}$$

Graph the function.
22.

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

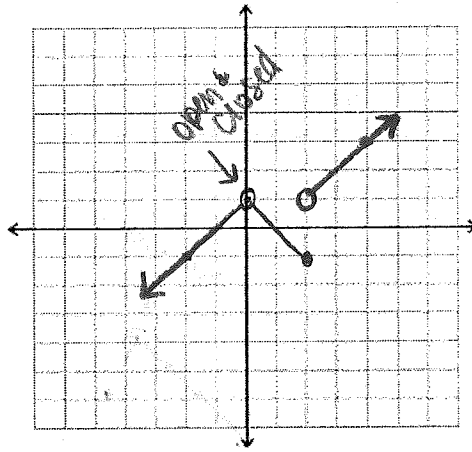


$$\begin{array}{r|l} x+3 & \\ \hline x & y \\ 0 & 3 \\ -2 & 1 \end{array}$$

$$\begin{array}{r|l} 2x & \\ \hline x & y \\ 0 & 0 \\ 2 & 4 \end{array}$$

23.

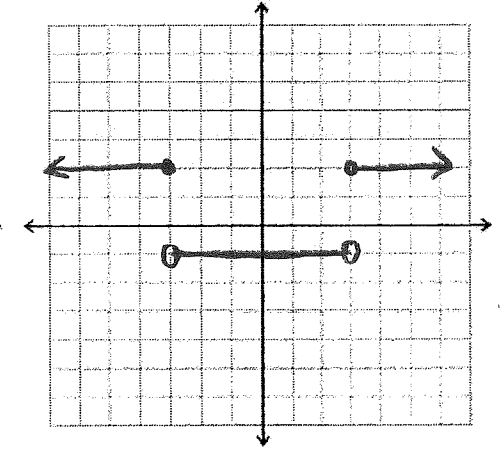
$$f(x) = \begin{cases} x+1, & \text{if } x < 0 \\ -x+1, & \text{if } 0 \leq x \leq 2 \\ x-1, & \text{if } x > 2 \end{cases}$$



$$\begin{array}{r|l} x+1 & \\ \hline x & y \\ 0 & 1 \\ -2 & -1 \end{array} \quad \begin{array}{r|l} -x+1 & \\ \hline x & y \\ 0 & 1 \\ 2 & -1 \end{array} \quad \begin{array}{r|l} x-1 & \\ \hline x & y \\ 2 & 1 \\ 4 & 3 \end{array}$$

24.

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



$$\begin{array}{r|l} x+3 & \\ \hline x & y \\ 0 & 3 \\ -2 & 1 \end{array}$$

$$\begin{array}{r|l} 2x & \\ \hline x & y \\ 0 & 0 \\ 2 & 4 \end{array}$$

$$\begin{array}{r|l} x+1 & \\ \hline x & y \\ 0 & 1 \\ -2 & -1 \end{array} \quad \begin{array}{r|l} -x+1 & \\ \hline x & y \\ 0 & 1 \\ 2 & -1 \end{array} \quad \begin{array}{r|l} x-1 & \\ \hline x & y \\ 2 & 1 \\ 4 & 3 \end{array}$$