

7.2.D1 - PIECEWISE DEFINED FUNCTIONS

1. Describe and correct the error in finding $f(5)$ when $f(x) = \begin{cases} 2x - 3, & \text{if } x < 5 \\ x + 8, & \text{if } x \geq 5 \end{cases}$

✗

$$f(5) = 2(5) - 3$$

$$= 7$$

For each piecewise function, evaluate to find the specified function values.

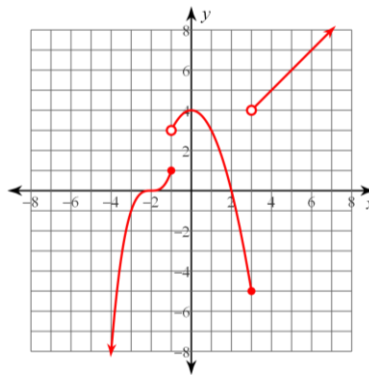
2. $f(x) = \begin{cases} 3, & \text{for } x \leq -2, \\ \frac{1}{2}x + 6, & \text{for } x > -2 \end{cases}$
 $f(-5), f(-2), f(0),$ and $f(2)$

3. $g(x) = \begin{cases} x + 4, & \text{for } x \leq 1, \\ 8 - x, & \text{for } x > 1 \end{cases}$
 $g(-4), g(0), g(1),$ and $g(3)$

4. $f(x) = \begin{cases} -5x - 8, & \text{for } x < -2, \\ \frac{1}{2}x + 5, & \text{for } -2 \leq x \leq 4, \\ 10 - 2x, & \text{for } x > 4 \end{cases}$
 $f(-4), f(-2), f(4),$ and $f(6)$

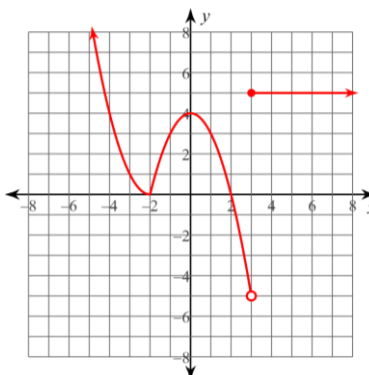
Use the piecewise function formula or its graph to find the specified values.

$$h(x) = \begin{cases} (x + 2)^3, & x \leq -1 \\ 4 - x^2, & -1 < x \leq 3 \\ |x| + 1, & x > 3 \end{cases}$$



4. Evaluate $h(-5)$
5. Evaluate $h(-1)$
6. Evaluate $h(3)$
7. Evaluate $h(9)$
8. Solve $h(x) = 3$ for x .

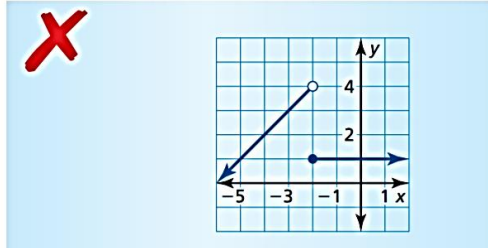
$$f(x) = \begin{cases} (x + 2)^2, & x \leq -2 \\ 4 - x^2, & -2 < x < 3 \\ 5, & x \geq 3 \end{cases}$$



9. Evaluate $f(-9)$
10. Evaluate $f(3)$
11. Evaluate $f(1000)$
12. Solve $f(x) = 4$ for x .
13. Solve $f(x) = 0$ for x .

14. **ERROR ANALYSIS** Describe and correct the error in

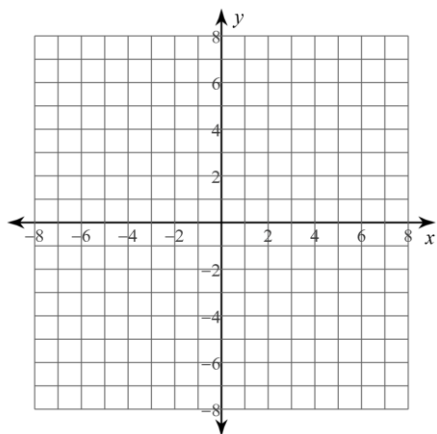
$$\text{graphing } y = \begin{cases} x + 6, & \text{if } x \leq -2 \\ 1, & \text{if } x > -2 \end{cases}$$



Sketch the graph of each piecewise function.

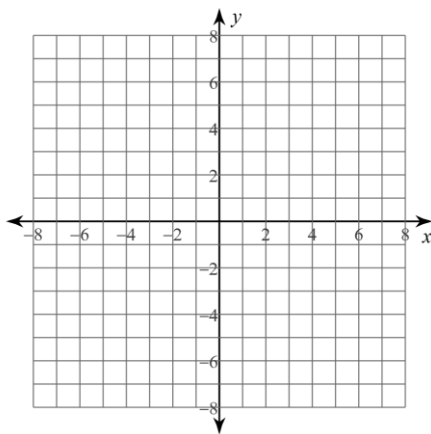
15.

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



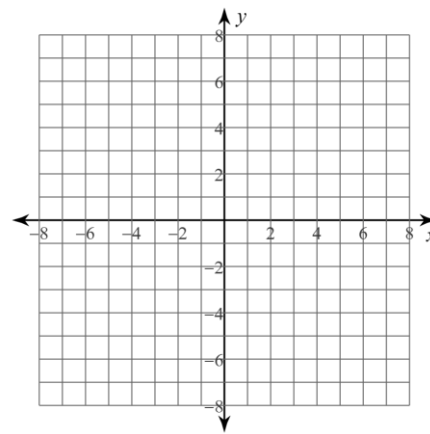
16.

$$f(x) = \begin{cases} -2x - 1, & x < -1 \\ x - 4, & x > -1 \end{cases}$$



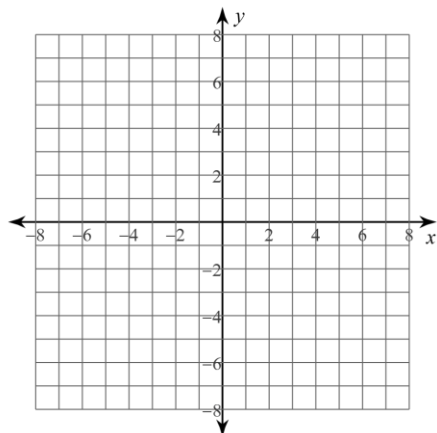
17.

$$f(x) = \begin{cases} -2x - 2, & x \leq 2 \\ -x, & x > 4 \end{cases}$$



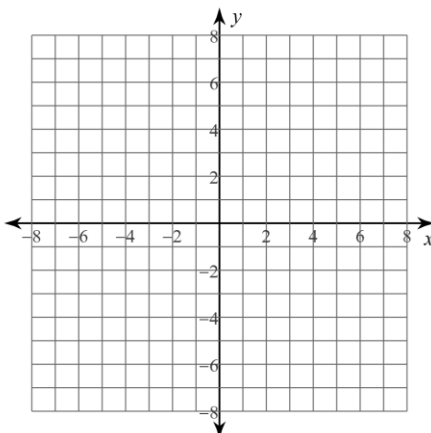
18.

$$h(x) = \begin{cases} -3, & x < 0 \\ 2x - 4, & 0 < x \leq 4 \\ -x + 1, & x > 4 \end{cases}$$



19.

$$w(x) = \begin{cases} x + 4, & x < -4 \\ -x + 2, & -4 \leq x \leq 2 \\ x, & x > 2 \end{cases}$$



20.

$$w(x) = \begin{cases} x + 3, & x \leq -2 \\ x, & -2 < x < 4 \\ -3, & x > 4 \end{cases}$$

