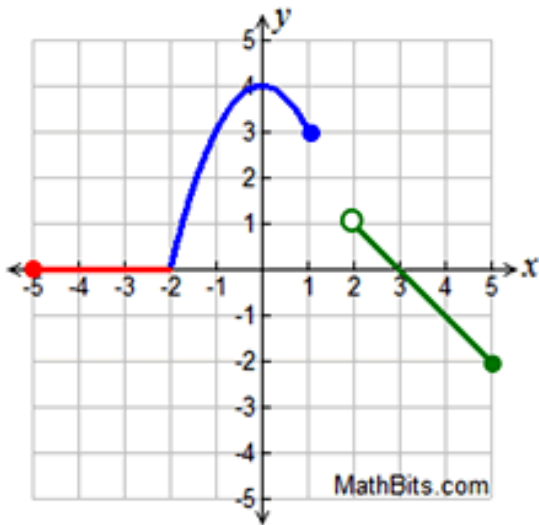


Piecewise Defined Functions

Evaluate the following piecewise functions given the picture below.

1. $f(x)$



a) $f(-3)$

b) $f(0)$

c) $f(1)$

d) What does x equal when $f(x) = -1$?

e) What does x equal when $f(x) = 3$?

f) What does x equal when $f(x) = 4$?

2. Evaluate the following Piecewise function given the equations below.

$f(x) = \begin{cases} x^2 + 6, & \text{if } x \leq 4 \\ 5x - 3, & \text{if } x > 4 \end{cases}$		$g(x) = \begin{cases} x - 2, & \text{if } x \leq -5 \\ 3x + 7, & \text{if } x > -5 \end{cases}$		$h(x) = \begin{cases} 10x, & \text{if } x < 0 \\ x^2 + 2x + 1, & \text{if } x \geq 0 \end{cases}$	
a) $g(10)$	b) $f(9)$	c) $f(4)$	d) $h(1)$	e) $h(0)$	
f) $g(-5)$	g) $h(-5)$	h) $f(0)$	i) $g(-6)$	j) $f(20)$	

Review Problems:

3. Solve the system of equations by graphing:

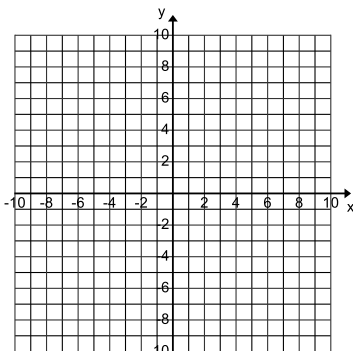
$$x = -3$$

$$x^2 + y^2 = 9$$

4. Solve the system of equations algebraically:

$$y = x^2 + 2x + 1$$

$$y = x + 3$$



5. Solve by factoring:
 $2x^2 - 13x - 7 = 0$

6. The shadow cast by a lighthouse is 30 feet long. At the same time, the shadow cast by a 4 foot tall sign is 3 feet long. How tall is the lighthouse?

Extended Understanding: Graph the following piecewise defined functions:

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

8. $f(x) = \begin{cases} x + 4, & \text{if } x \leq 0 \\ 2x + 3, & \text{if } x > 0 \end{cases}$

