

## Piecewise Functions

Evaluate the function for the given value.

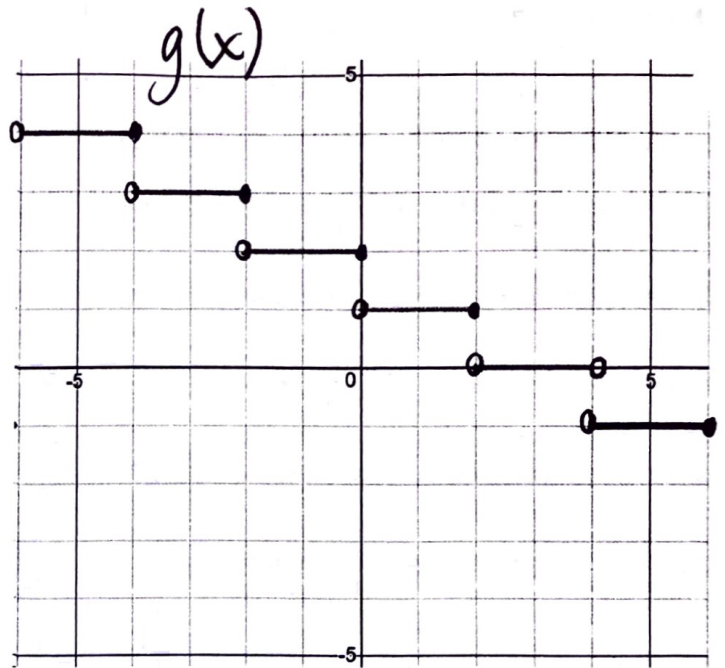
1.  $g(-2) = \underline{3}$

2.  $g(4) = \underline{\emptyset, \text{undefined, no solution}}$

3.  $g(6) = \underline{-1}$

4.  $g(-2) - 3g(4) + 2g(6) = \underline{1}$

$$3 + 2(-1) = 3 + -2 = 3 - 2$$



5.  $f(3) = \underline{1}$

6.  $f(-1/2) = \underline{-1}$

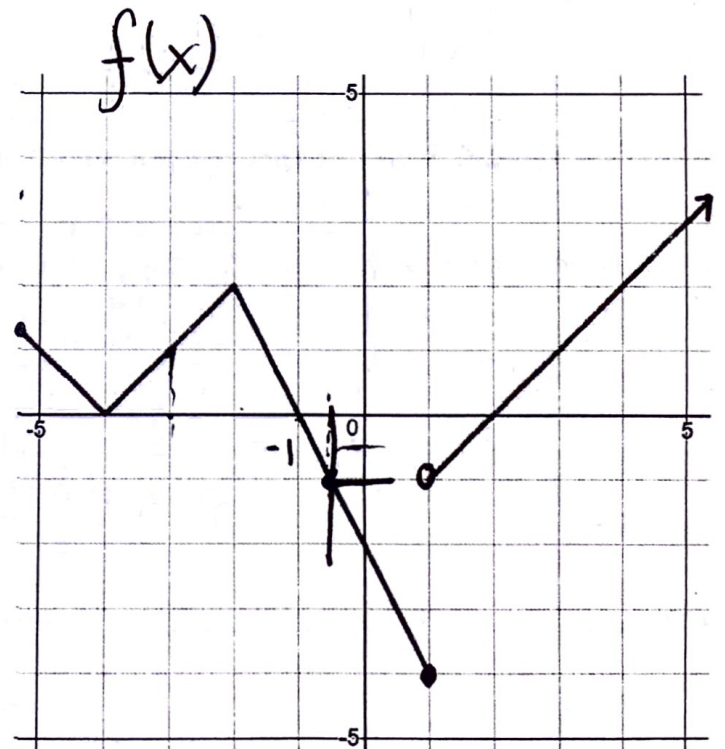
7.  $f(-3) = \underline{1}$

8.  $f(1) = \underline{-4}$

9.  $2\hat{f}(-2) - 8\hat{f}(2) + 3\hat{f}(-5) = \underline{-1}$

$$2(-2) - 8(0) + 3(1)$$

$$-4 - 0 + 3$$



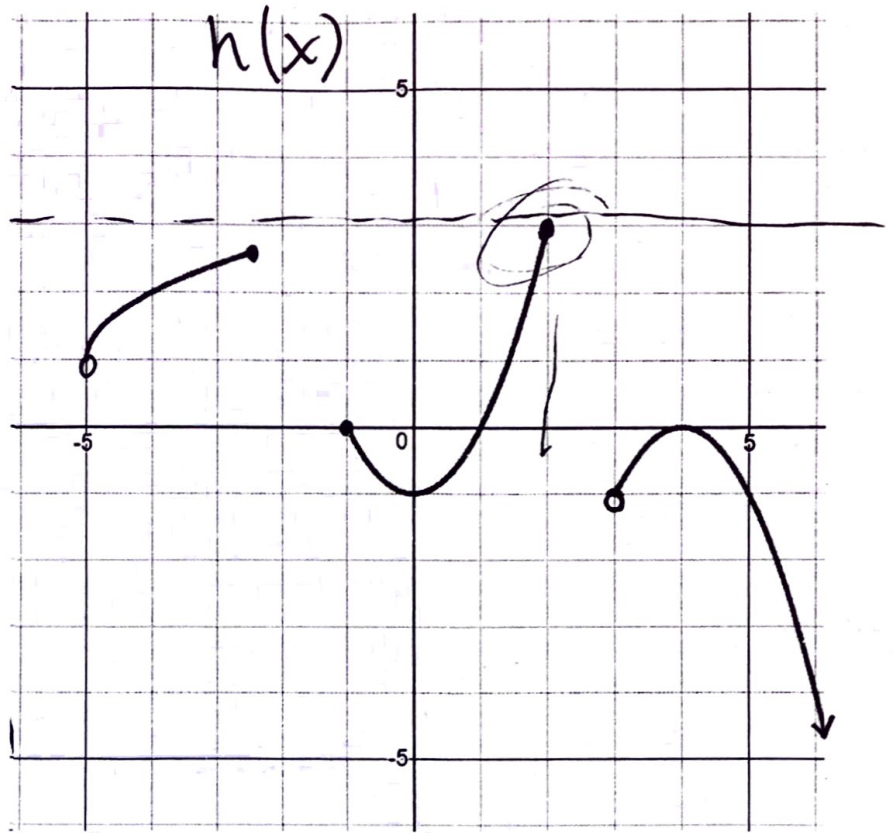
11.  $h(0) = \underline{-1}$

12.  $h(-4) = \underline{2}$

13.  $h(5) = \underline{-1}$

14.  $h(-2) = \underline{\emptyset}$

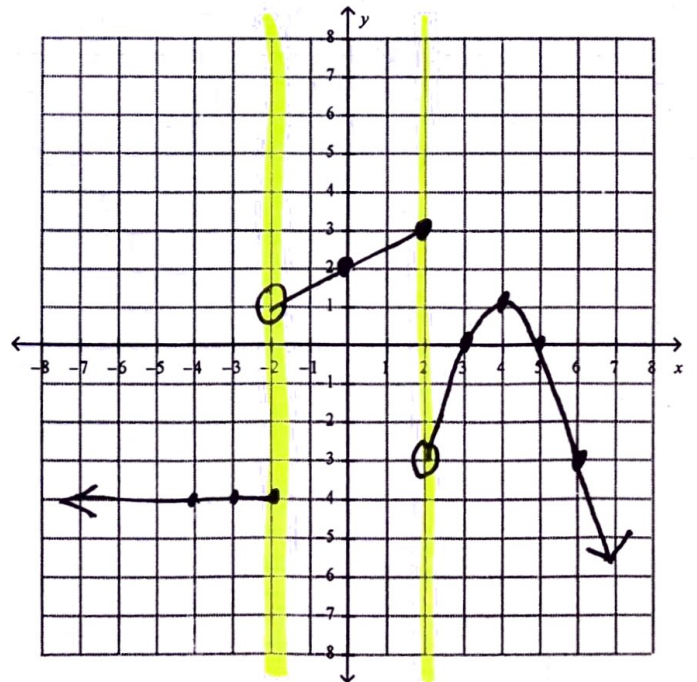
15.  $h(\overset{x}{\underline{2}}) = 3$



Graph. P.26

$$16. f(x) = \begin{cases} \text{---} -4 & x \leq -2 \\ \frac{1}{2}x + 2 & -2 < x \leq 2 \\ -(x-4)^2 + 1 & x > 2 \end{cases} \begin{matrix} \text{LEFT} \\ \text{MIDDLE} \\ \text{RIGHT} \end{matrix}$$

	x	y	
closed	-4	-4	LEFT
	-3	-4	
	-2	-4	
open	-2	1	MIDDLE
	-1	1.5	
closed	0	2	$\frac{1}{2}x + 2$
	1	2.5	
	2	3	
open	2	-3	RIGHT
	3	0	
	4	1	
	5	0	
	6	-3	



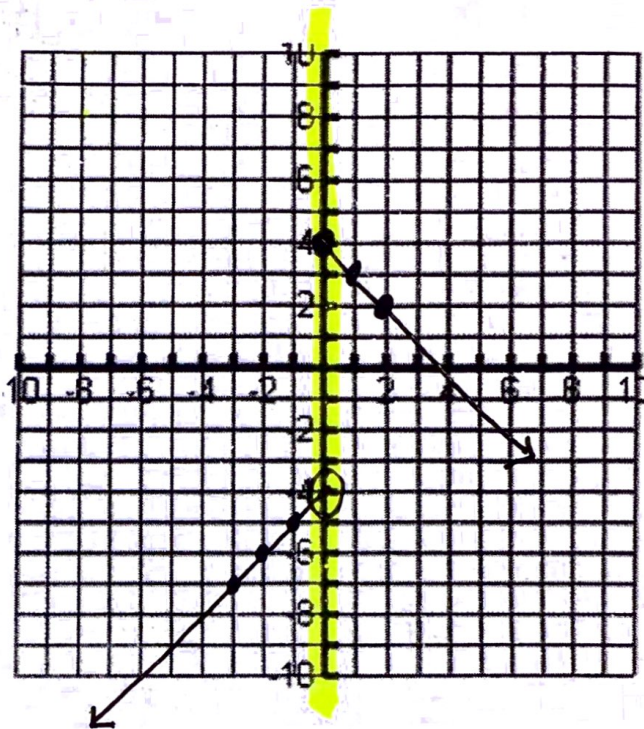


### Example 1

Graph the following Piecewise Function. Make sure you restrict your domain for certain "pieces" of the function.

$$f(x) = \begin{cases} x-4, & x < 0 \text{ LEFT} \\ -x+4, & x \geq 0 \text{ RIGHT} \end{cases}$$

	x	y	
	-2	-6	LEFT
	-1	-5	$x-4$
open	0	-4	
closed	0	4	RIGHT
	1	3	$-x+4$
	2	2	

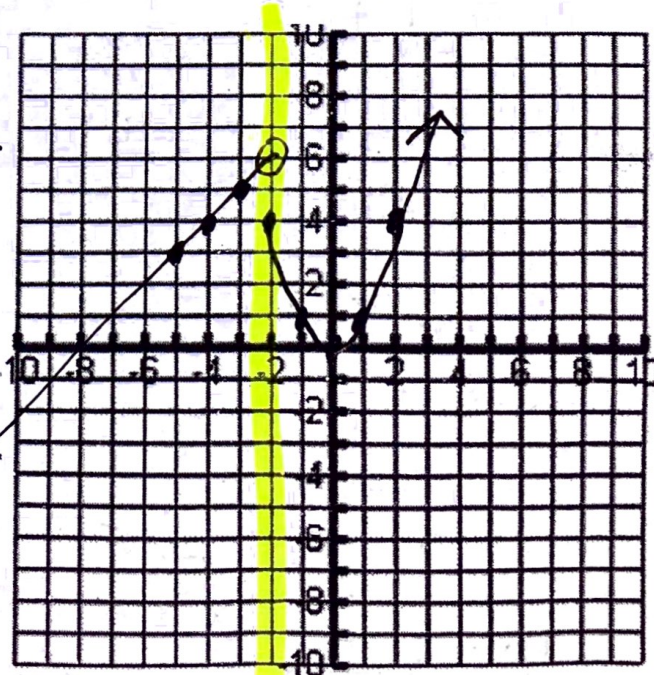


### Example 2

Graph the following Piecewise Function. Make sure you restrict your domain for certain "pieces" of the function.

$$f(x) = \begin{cases} x+8, & x < -2 \text{ LEFT} \\ x^2, & x \geq -2 \text{ RIGHT} \end{cases}$$

	x	y	
	-4	4	LEFT
	-3	5	$x+8$
open	-2	6	
closed	-2	4	RIGHT
	-1	1	$x^2$
	0	0	
	1	1	





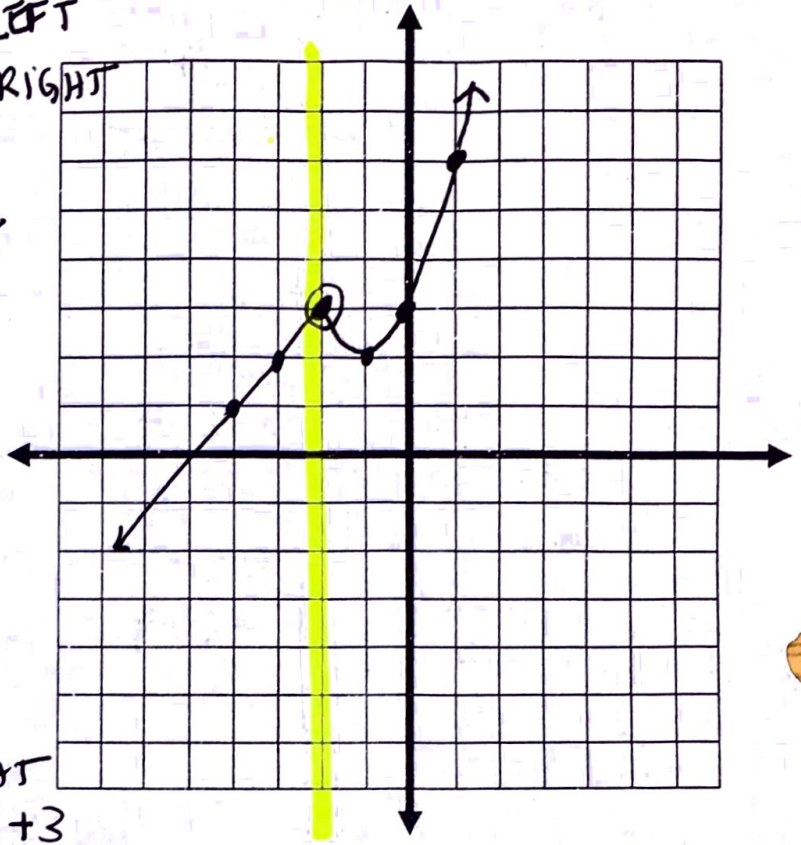
Carefully graph each of the following. Then, evaluate the graph at any specified domain value.

1.  $f(x) = \begin{cases} x+5 & x < -2 \text{ LEFT} \\ x^2+2x+3 & x \geq -2 \text{ RIGHT} \end{cases}$

use graph!

$$\begin{cases} f(3) = 3^2 + 2(3) + 3 = 18 \\ f(-4) = 1 \\ f(-2) = 3 \end{cases}$$

x	y	
-4	1	LEFT
-3	2	$x+5$
-2	3	
-2	3	RIGHT
-1	2	$x^2+2x+3$
0	3	
1	6	



2.  $f(x) = \begin{cases} 2x+1 & x \geq 1 \text{ RIGHT} \\ x^2+3 & x < 1 \text{ LEFT} \end{cases}$

$$\begin{aligned} f(-2) &= (-2)^2 + 3 = 7 \\ f(6) &= 2(6) + 1 = 13 \\ f(1) &= 3 \end{aligned}$$

x	y	
-1	4	LEFT
0	3	$x^2+3$
1	4	
1	3	RIGHT
2	5	$2x+1$
3	7	

