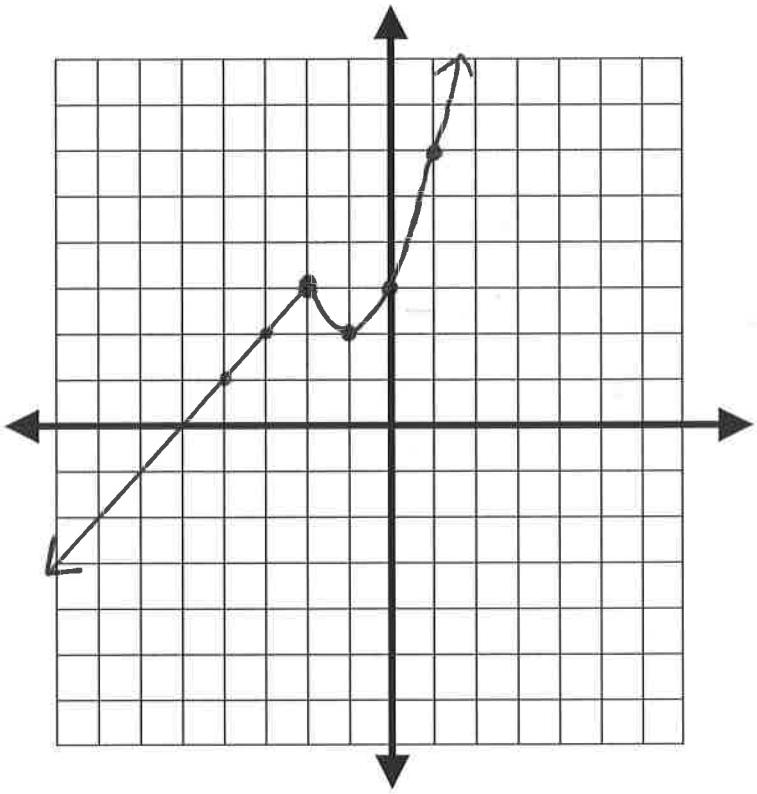
7.2B Worksheet Piecewise Functions
Algebra 2

Name: Answer Key

Part I. Carefully graph each of the following. Identify whether or not the graph is a function. Then, evaluate the graph at any specified domain value.

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



Function? (Yes) or No

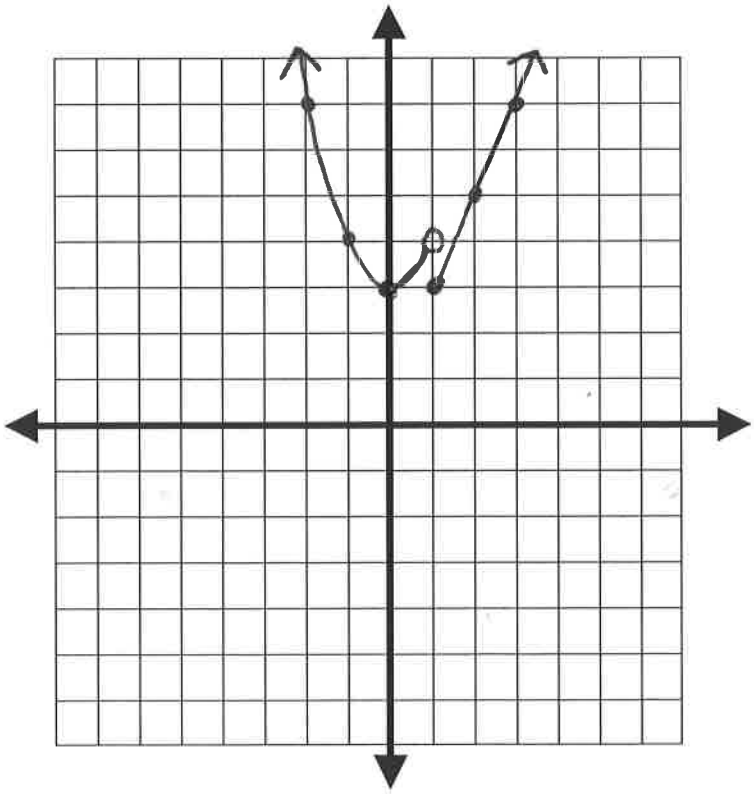
$f(3) =$ 18

$f(-4) =$ 1

$f(-2) =$ 3

$x+5$		x^2+2x+3
$(-2, 3)$	o	$(-2, 3)$ •
$(-3, 2)$		$(-1, 2)$
$(-4, 1)$		$(0, 3)$
		$(1, 6)$

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



Function? (Yes) or No

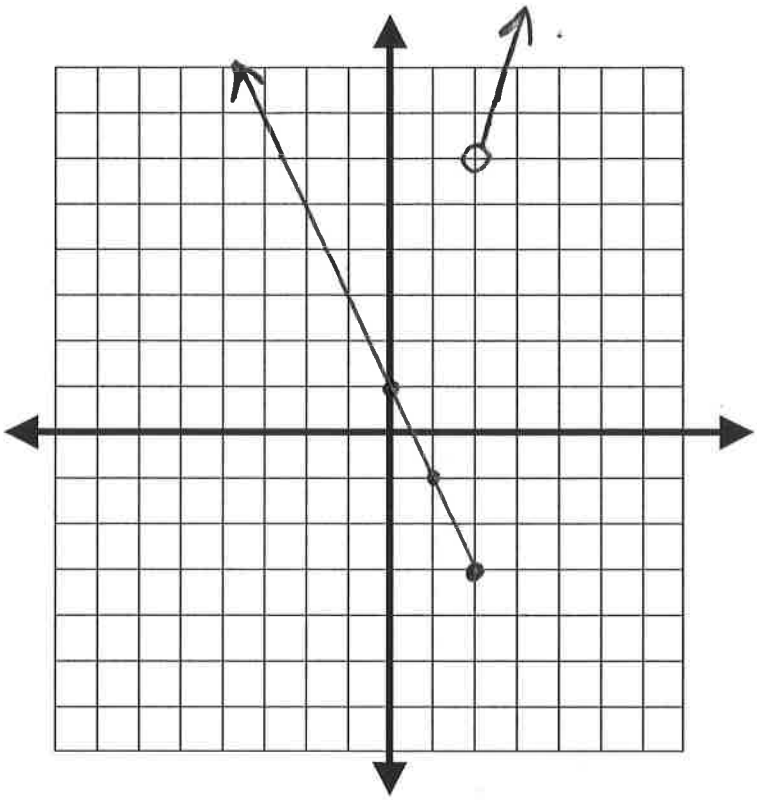
$f(-2) =$ 7

$f(6) =$ 13

$f(1) =$ 3

$2x+1$		x^2+3
$(1, 3)$	•	$(1, 4)$ o
$(2, 5)$		$(0, 3)$
$(3, 7)$		$(-1, 4)$
		$(-2, 7)$

3. $f(x) = \begin{cases} -2x+1 & x \le 2 \\ 5x-4 & x > 2 \end{cases}$



Function? Yes or No

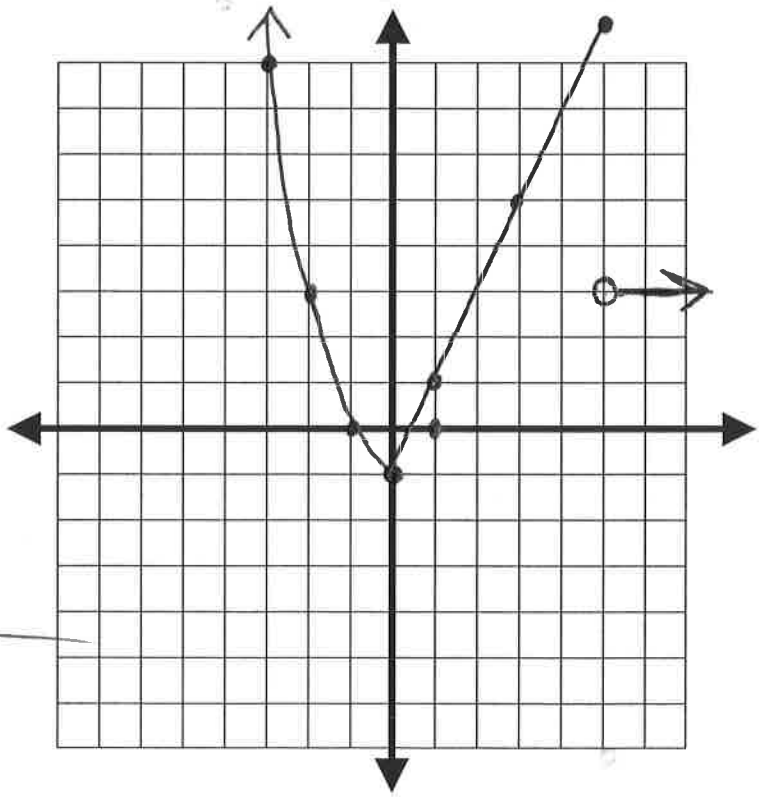
$f(-4) =$ 9

$f(8) =$ 36

$f(2) =$ -3

$-2x+1$	$5x-4$
$(2,-3)$ •	$(2,6)$ ○
$(1,-1)$	$(3,11)$
$(0,1)$	$(4,16)$

4. $f(x) = \begin{cases} x^2-1 & x \le 0 \\ 2x-1 & 0 < x \le 5 \\ 3 & x > 5 \end{cases}$



Function? Yes or No

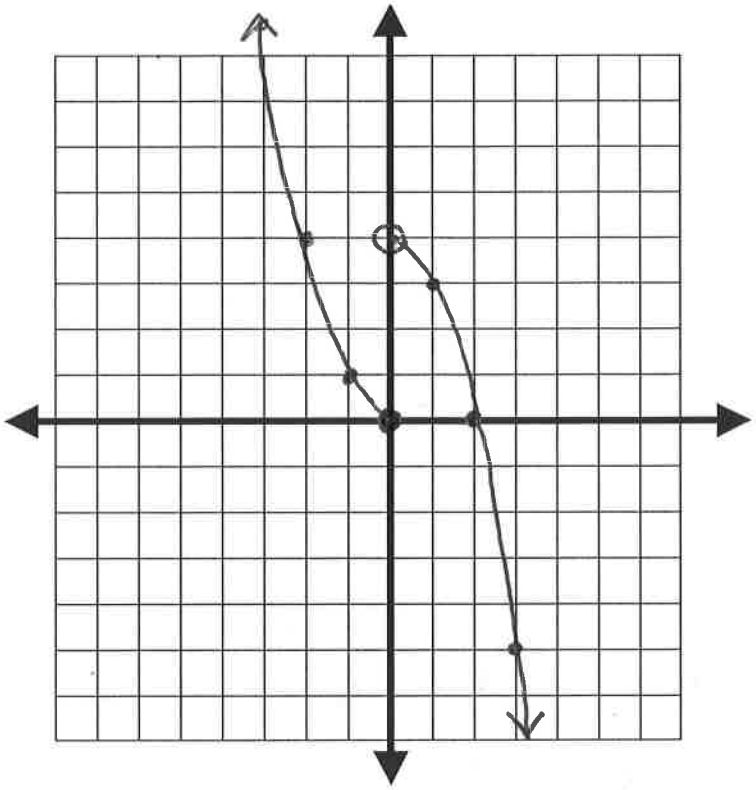
$f(-2) =$ 3

$f(0) =$ -1

$f(5) =$ 9

x^2-1	$2x-1$	3
$(0,-1)$ •	$(0,-1)$ ○	$(5,3)$ ○
$(-1,0)$	$(1,1)$	$(6,3)$
$(-2,3)$	$(3,5)$	$(7,3)$
$(-3,8)$		
	$(5,9)$ •	

5. $f(x) = \begin{cases} x^2 & x \le 0 \\ -x^2 + 4 & x > 0 \end{cases}$



Function? Yes or No

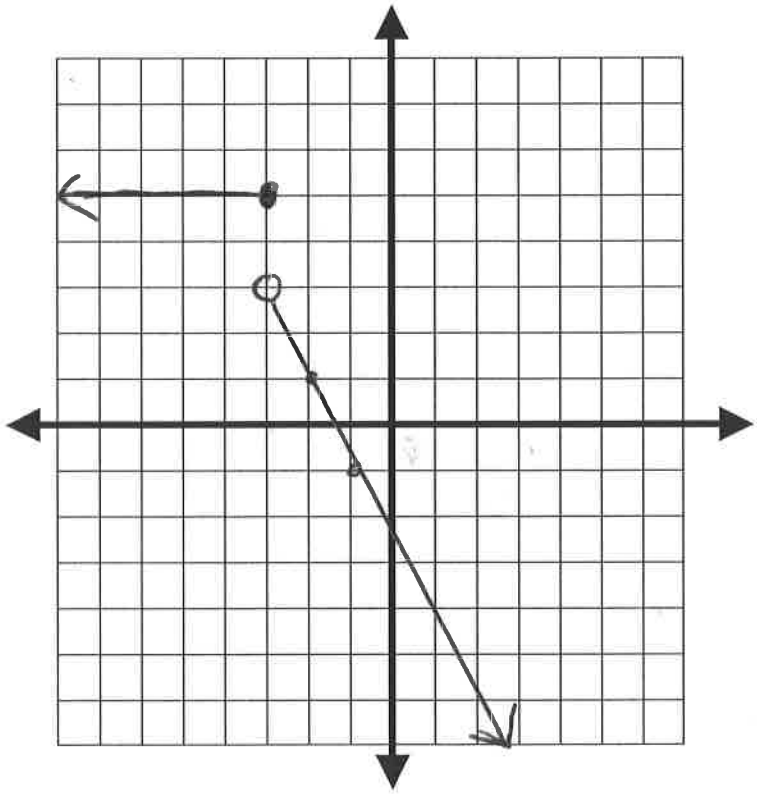
$f(-4) = 16$

$f(0) = 0$

$f(3) = -5$

x^2	$-x^2+4$
$(0,0)$ •	$(0,4)$ o
$(-1,1)$	$(1,3)$
$(-2,4)$	$(2,0)$
$(-3,9)$	$(3,-5)$

6. $f(x) = \begin{cases} 5 & x \le -3 \\ -2x - 3 & x > -3 \end{cases}$



Function? Yes or No

$f(-4) =$

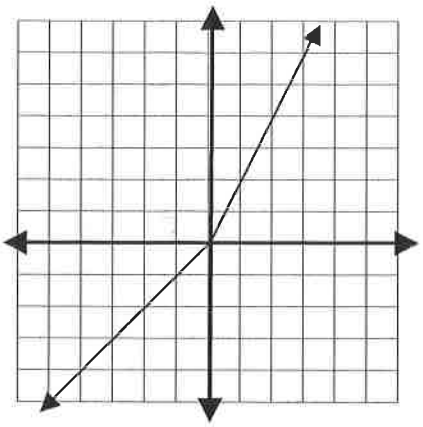
$f(0) =$

$f(3) =$

5	$-2x-3$
$(-3,5)$ •	$(-3,3)$ o
$(-4,5)$	$(-2,1)$
$(-5,5)$	$(-1,-1)$

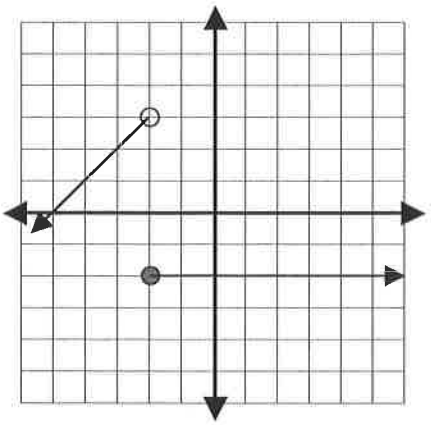
Part II. Write equations for the piecewise functions whose graphs are shown below. Assume that the units are 1 for every tick mark.

7.



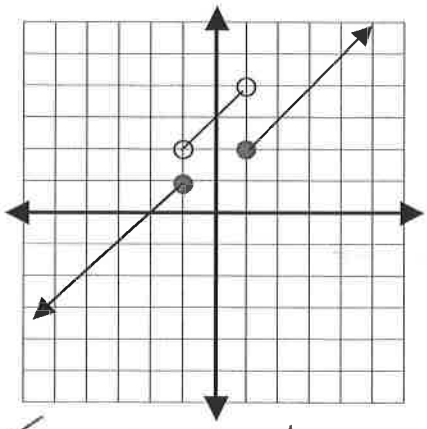
$$f(x)=\begin{cases} x & x\le 0 \\ 2x & x>0 \end{cases}$$

8.



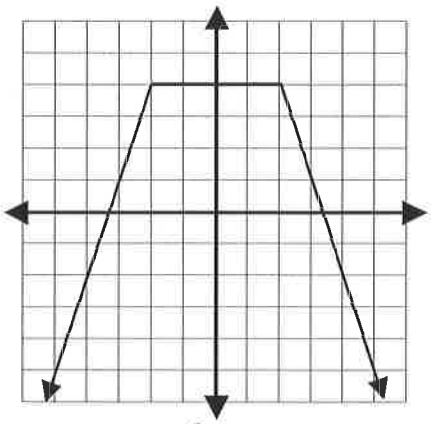
$$f(x)=\begin{cases} x+5 & x<-2 \\ -2 & x\ge -2 \end{cases}$$

9.



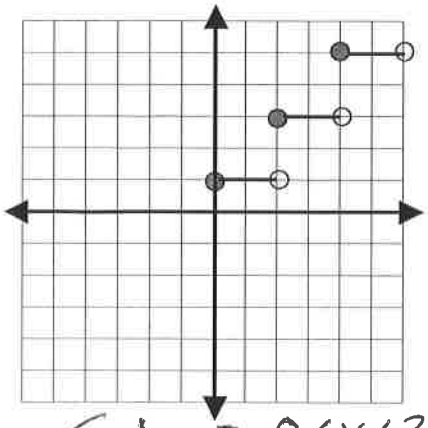
$$f(x)=\begin{cases} x+2 & x\le -1 \\ x+3 & -1<x<1 \\ x+1 & x\ge 1 \end{cases}$$

10.



$$f(x)=\begin{cases} 3x+10 & x\le -2 \\ 4 & -2<x<2 \\ -3x+10 & x\ge 2 \end{cases}$$

11.



$$f(x)=\begin{cases} 1 & 0\le x<2 \\ 3 & 2\le x<4 \\ 5 & 4\le x<6 \end{cases}$$