

Chi Worksheet Piecewise Functions
Section 1

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

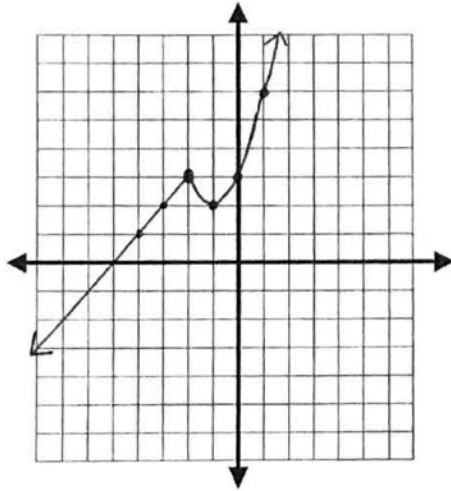
Function? Yes or No

$f(3) = 18$

$f(-4) = 1$

$f(-2) = 3$

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



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

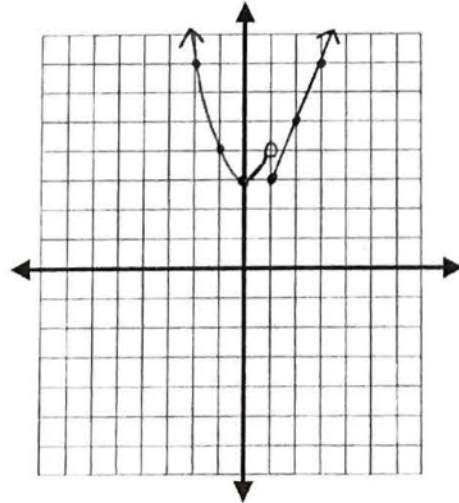
Function? Yes or No

$f(-2) = 7$

$f(6) = 13$

$f(1) = 3$

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



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

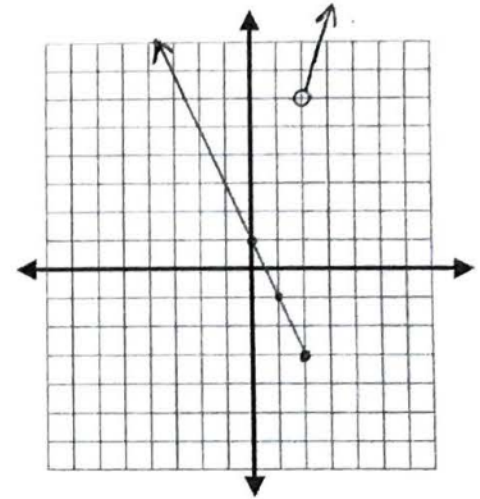
Function? Yes or No

$f(-4) = 9$

$f(8) = 36$

$f(2) = -3$

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



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

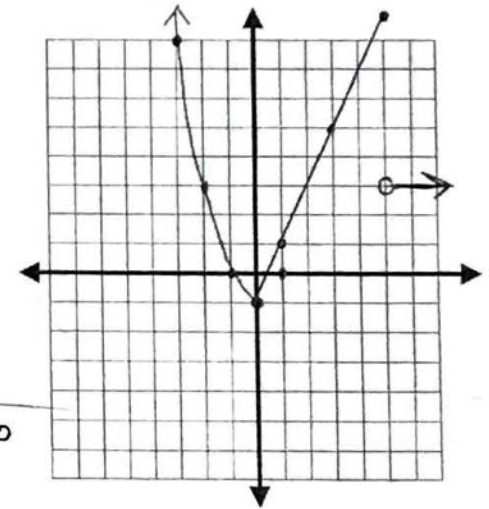
Function? Yes or No

$f(-2) = 3$

$f(0) = -1$

$f(5) = 9$

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



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

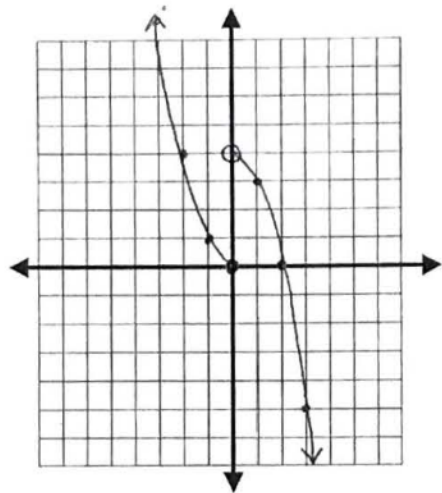
Function? Yes or No

$$f(-4) = 16$$

$$f(0) = 0$$

$$f(3) = -5$$

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



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

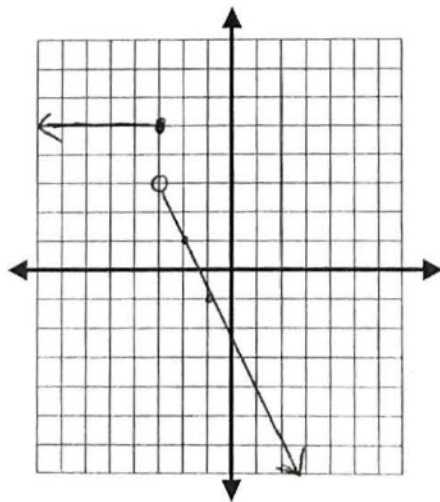
Function? Yes or No

$$f(-4) = 5$$

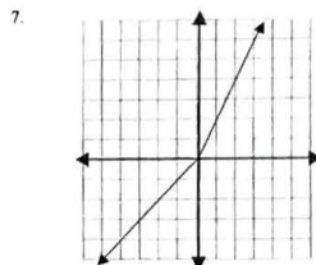
$$f(0) = -3$$

$$f(3) = -9$$

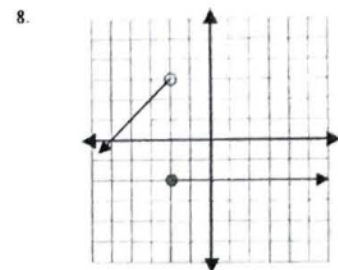
5	$-2x - 3$
$(-3, 5)$ •	$(-3, 3)$ ○
$(-4, 5)$	$(-2, 1)$
$(-5, 5)$	$(-1, -1)$



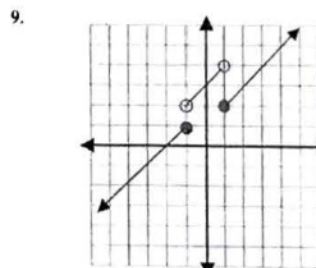
Part II. Write equations for the piecewise functions whose graphs are shown below. Assume that the units are 1 for every tick mark.



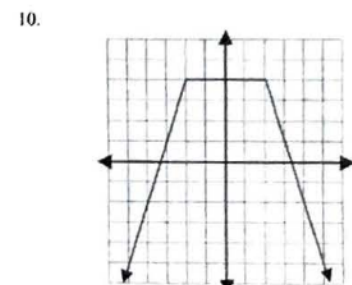
$$f(x) = \begin{cases} x & x \leq 0 \\ 2x & x > 0 \end{cases}$$



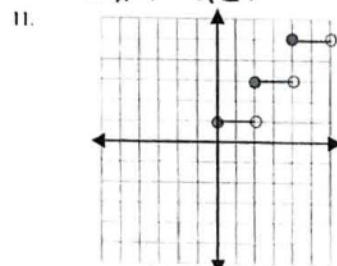
$$f(x) = \begin{cases} x+5 & x < -2 \\ -2 & x \geq -2 \end{cases}$$



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



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



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