Name_____

Date_____Period_____

Accel Geom/Adv Alg

Piecewise Function HW

04/29/19

Evaluate the following functions for the given value of x:

$$f(x)=\begin{cases}8 & if\ x<2\\ -3x+6 & if\ 2\le x<12\\ -6x^2-3x & if\ x\ge 12\end{cases}$$

$$g(x)=\begin{cases}2x^3 & if\ x\le -4\\ 1 & if\ -4<x<0\\ -6x+4 & if\ x\ge 0\end{cases}$$

$$h(x)=\begin{cases}x^2-5x+4 & if\ x<7\\ 8x^2 & if\ 7\le x<10\\ -12x-4 & if\ x\ge 10\end{cases}$$

$$p(x)=\begin{cases}-x^3+2x^2 & if\ x<-2\\ 7 & if\ -2\le x<9\\ x^2+8x & if\ x\ge 9\end{cases}$$

1) $f(20)$ -2460

2) $g(-5)$ -250

3) $p(4)$ 7

4) $h(6)$ 10

5) $g(0)$ 4

6) $p(-6)$ 288

7) $h(9)$ 648

8) $f(12)$ -900

9) $g(-10)$ -2000

10) $p(9)$ 153

11) $f(10)$ -24

12) $h(1)$ 0

Graph the following piecewise functions:

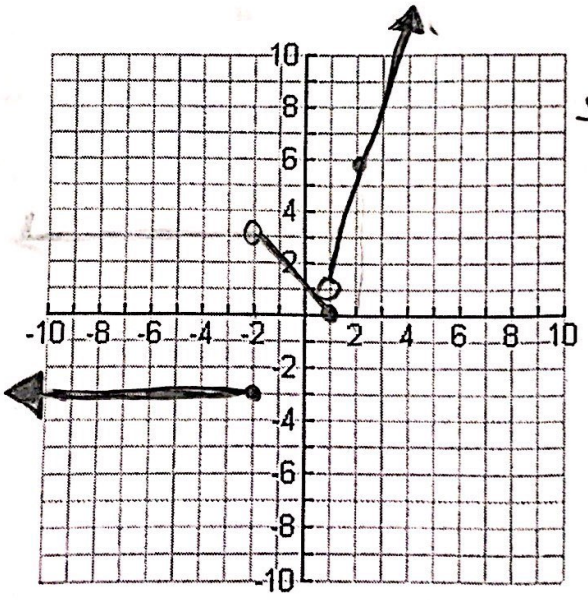
13) $f(x)=\begin{cases}-3 & if\ x\le -2\\ -x+1 & if\ -2<x\le 1\\ 5x-4 & if\ x>1\end{cases}$

$f(x)=-x+1$

x	y
-2	3
1	0

$f(x)=5x-4$

x	y
1	1
2	6



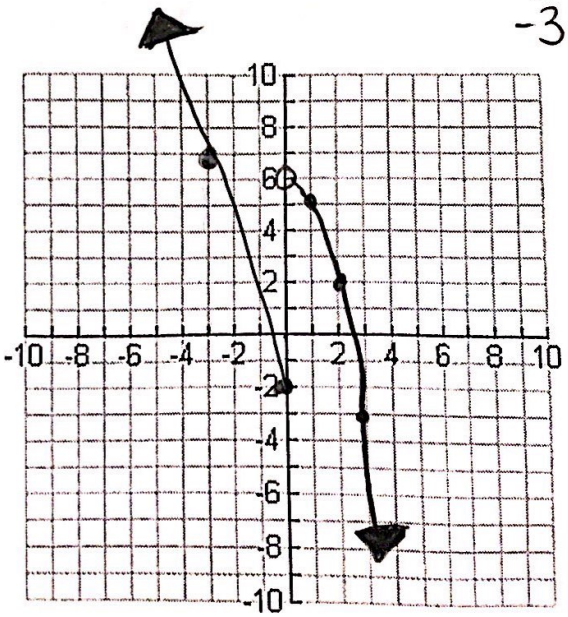
$f(x)=-x^2+6$

0	6
1	5
2	2
3	-3

14) $f(x)=\begin{cases}-3x-2 & if\ x\le 0\\ -x^2+6 & if\ x>0\end{cases}$

$f(x)=-3$

x	y
0	-2
-3	7

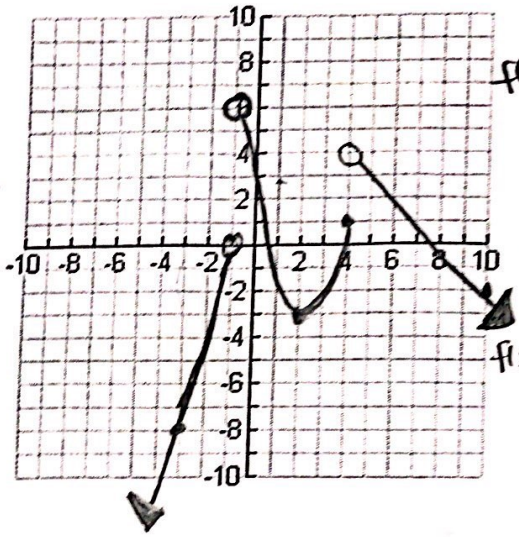


v(0,6) ∩

15) $f(x) = \begin{cases} 4x+4 & \text{if } x < -1 \\ (x-2)^2 - 3 & \text{if } -1 < x \le 4 \\ -x+8 & \text{if } x > 4 \end{cases}$

$f(x) = -x+8$

x	y
4	4
10	-2



$f(x) = 4x+4$

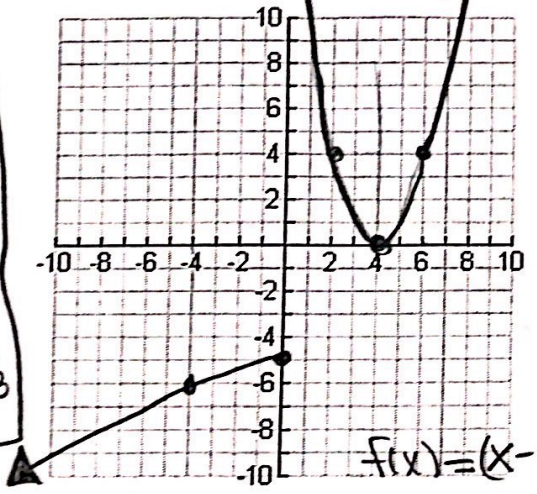
x	y
-1	0
-3	$-12+4=-8$

$f(x) = (x-2)^2 - 3$

2, -3

x	y
-1	6
2	-3
4	1

16) $f(x) = \begin{cases} \frac{1}{4}x - 5 & \text{if } x \le 0 \\ (x-4)^2 & \text{if } x > 0 \end{cases}$



$f(x) = (x-4)^2$

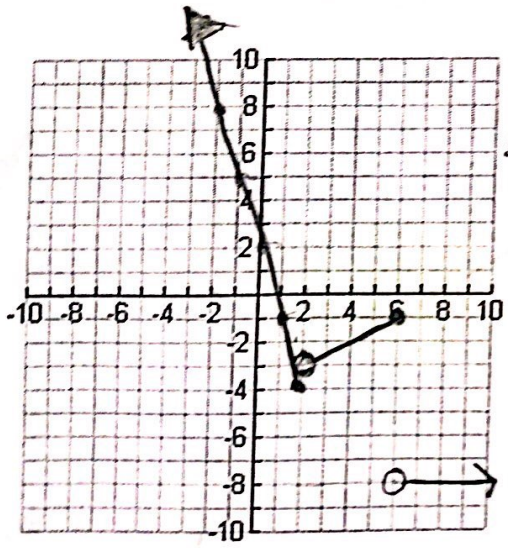
V(4,0)

x	y
0	16
4	0
6	4

$f(x) = \frac{1}{4}x - 5$

x	y
0	-5
-4	-6

17) $f(x) = \begin{cases} -3x+2 & \text{if } x \le 2 \\ \frac{1}{2}x - 4 & \text{if } 2 < x \le 6 \\ -8 & \text{if } x > 6 \end{cases}$



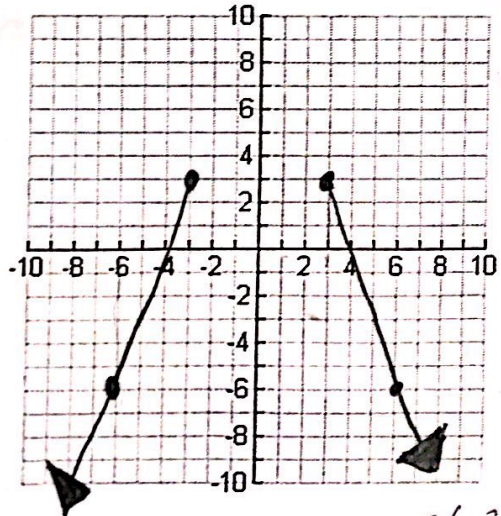
$f(x) = \frac{1}{2}x - 4$

x	y
2	-3
6	-1

$f(x) = -3x+2$

x	y
2	$-3(2)+2 = -6+2 = -4$
-2	$-3(-2)+2 = 6+2 = 8$

18) $g(x) = \begin{cases} 3x+12 & \text{if } x \le -3 \\ -3x+12 & \text{if } x \ge 3 \end{cases}$



$-3x+12$

x	y
3	3
6	-6

$-1(x+12$

$f(x) = 3x+12$

$-18+12$

$3(-3)+12$

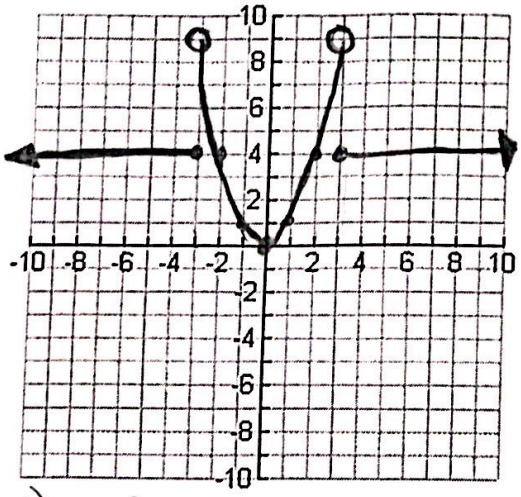
$-9+12$

x	y
-3	3
-6	-6

$3(-6)+12$

$-18+12$

9) $f(x) = \begin{cases} 4 & \text{if } x \le -3 \\ x^2 & \text{if } -3 < x < 3 \\ 4 & \text{if } x \ge 3 \end{cases}$



$f(x) = x^2$

$V(0,0)$

x	y
-3	9
0	0
3	9

20) $f(x) = \begin{cases} 6 & \text{if } x \le 0 \\ -2(x-2)^2 + 4 & \text{if } x > 0 \end{cases}$

$f(x) = -2(x-2)^2 + 4$

x	y
0	-4
2	4
4	-4

$-2(2-2)^2+4$

$-2(0)+4$

$0+4$

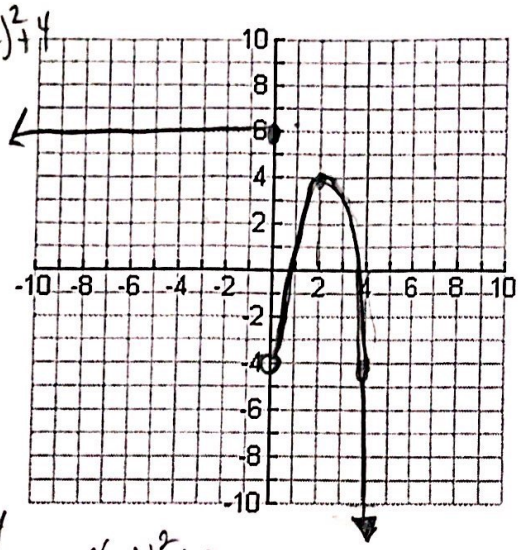
$-2(4-2)^2+4$

$-2(2)^2+4$

$-2 \cdot 4 + 4$

$-8+4$

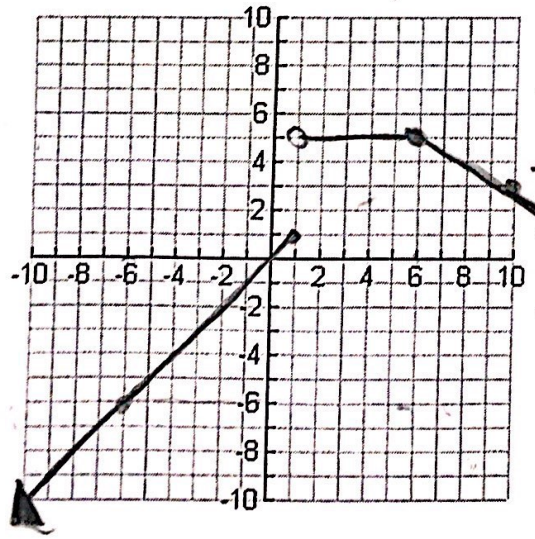
-4



$-2(-2)^2+4$

$-8+4$

21) $f(x) = \begin{cases} x & \text{if } x \le 1 \\ 5 & \text{if } 1 < x < 6 \\ \frac{-1}{2}x + 8 & \text{if } x \ge 6 \end{cases}$



$f(x) = x$

x	y
1	1
-6	-6

$f(x) = -\frac{1}{2}x + 8$

x	y
6	5
10	3

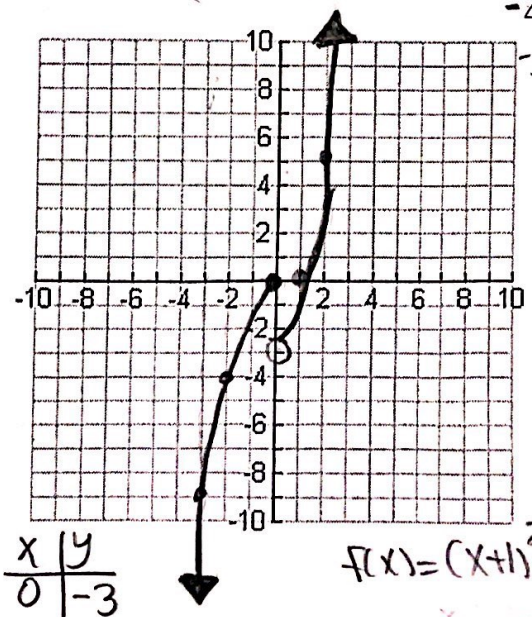
22) $f(x) = \begin{cases} -x^2 & \text{if } x \le 0 \\ (x+1)^2 - 4 & \text{if } x > 0 \end{cases}$

$V(0,0)$

$f(x) = -x^2$

0	0
-2	-4
-3	-9

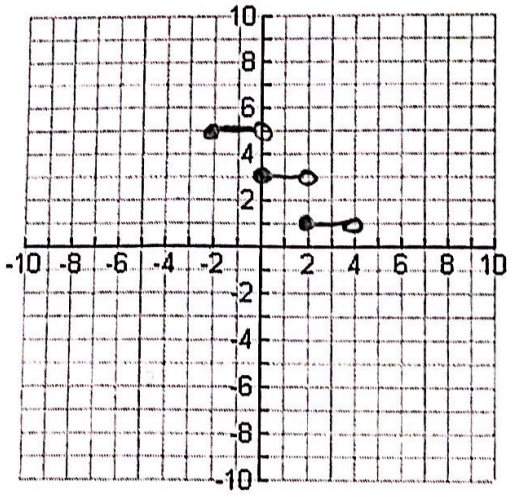
$(-1,-4)$



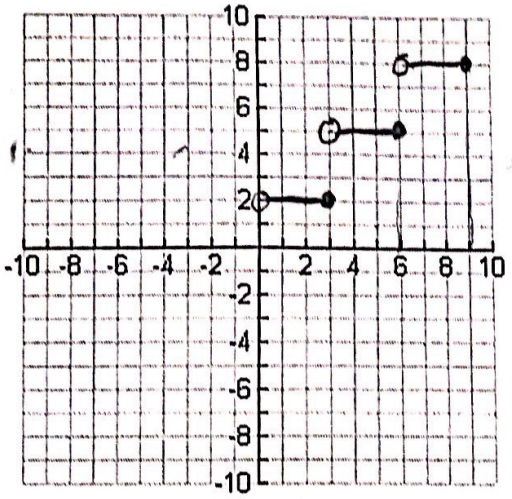
x	y
0	-3
1	0
2	5

$f(x) = (x+1)^2 - 4$

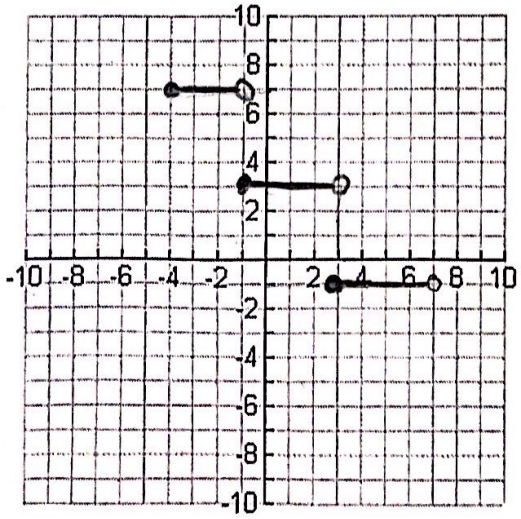
23) $f(x) = \begin{cases} 5 & if -2 \le x < 0 \\ 3 & if 0 \le x < 2 \\ 1 & if\ 2 \le x < 4 \end{cases}$



24) $f(x) = \begin{cases} 2 & if\ 0 < x \le 3 \\ 5 & if 3 < x \le 6 \\ 8 & if\ 6 < x \le 9 \end{cases}$



25) $f(x) = \begin{cases} 7 & if -5 \le x < -1 \\ 3 & if -1 \le x < 3 \\ -1 & if\ 3 \le x < 7 \end{cases}$



26) $f(x) = \begin{cases} -6 & if -8 < x \le -1 \\ -2 & if -1 < x \le 3 \\ 4 & if\ 3 < x \le 9 \end{cases}$