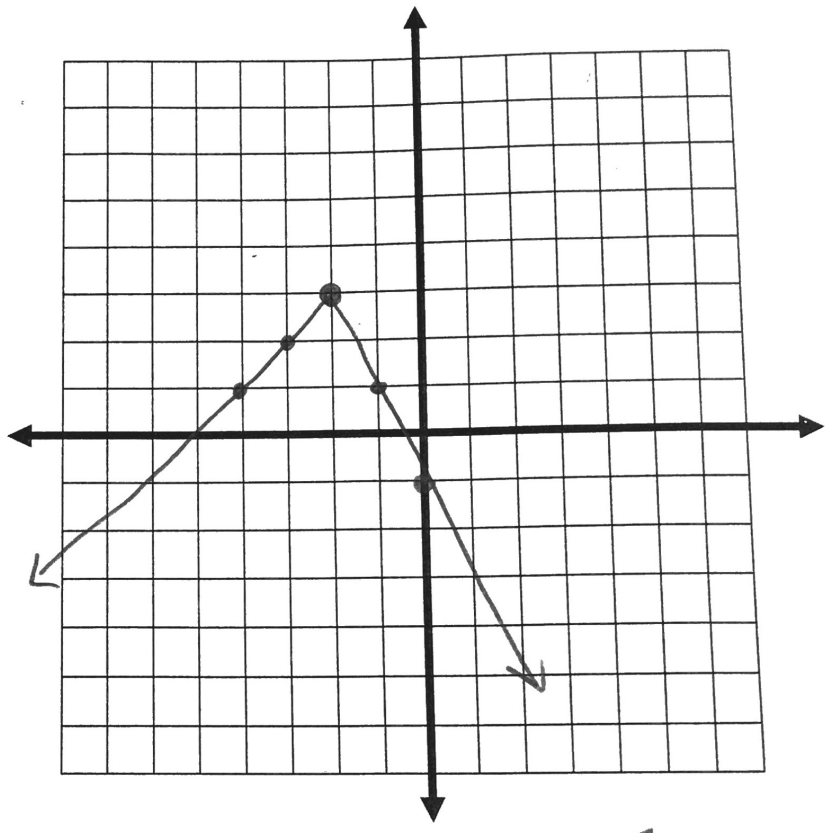
Accelerated Geom/Alg 2
Piecewise Functions

Name: Key

Part I. Carefully graph each of the following. Identify whether or not the graph continuous or discontinuous. Then, evaluate the graph at any specified domain value. Create your t-tables to help you graph.

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



Continuous or Discontinuous

$f(3)=-7$

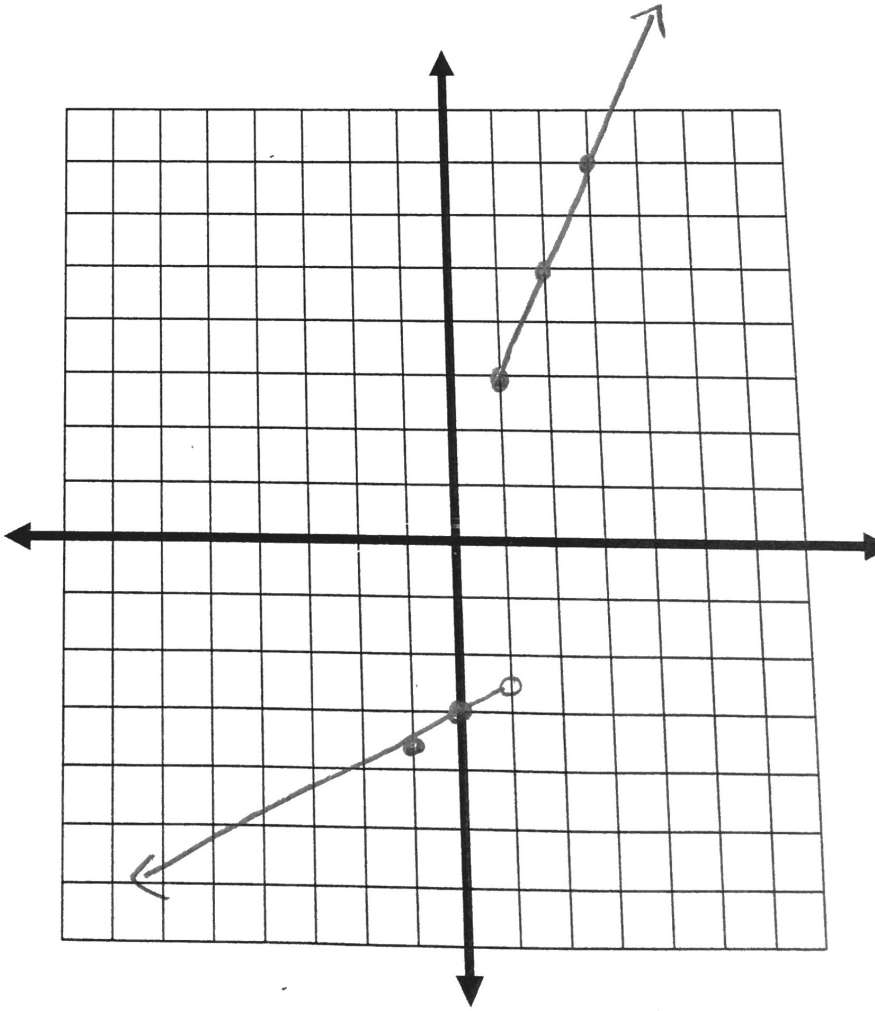
$f(-4)=1$

$f(-2)=3$

X	y
-2	3
-3	2
-4	1

X	y
-2	3
-1	1
0	-1

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



Continuous or Discontinuous

$f(-2)=-4$

$f(6)=13$

$f(1)=3$

X	y
1	3
2	5
3	7

X	y
1	-2.5
0	-3
-1	-3.5

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

Continuous or Discontinuous

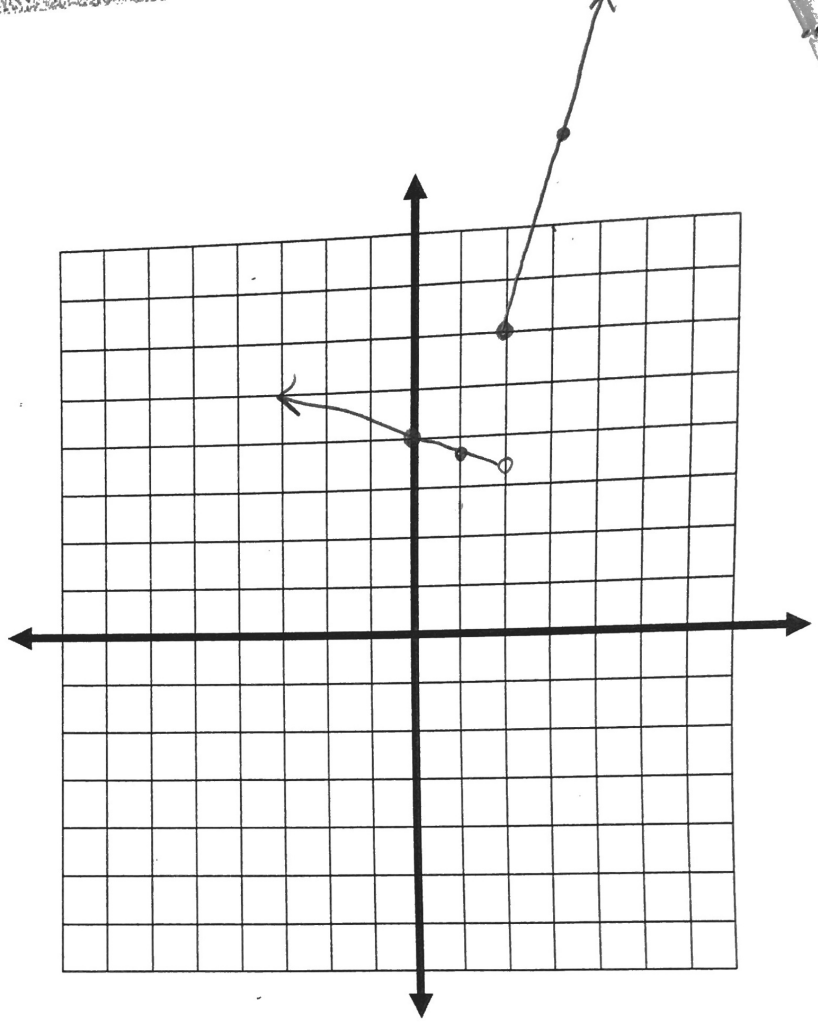
$f(-4)=5\frac{1}{3}$

$f(8)=30$

$f(2)=6$

X	y
2	6
3	10
4	14

X	y
2	$3\frac{1}{3}$
1	$3\frac{2}{3}$
0	4



4. $\begin{cases}-x+4 & x\leq 0\\ \frac{2}{3}x-1 & 0<x\leq 5\\ 2 & x>5\end{cases}$

Continuous or Discontinuous

$f(-2)=6$

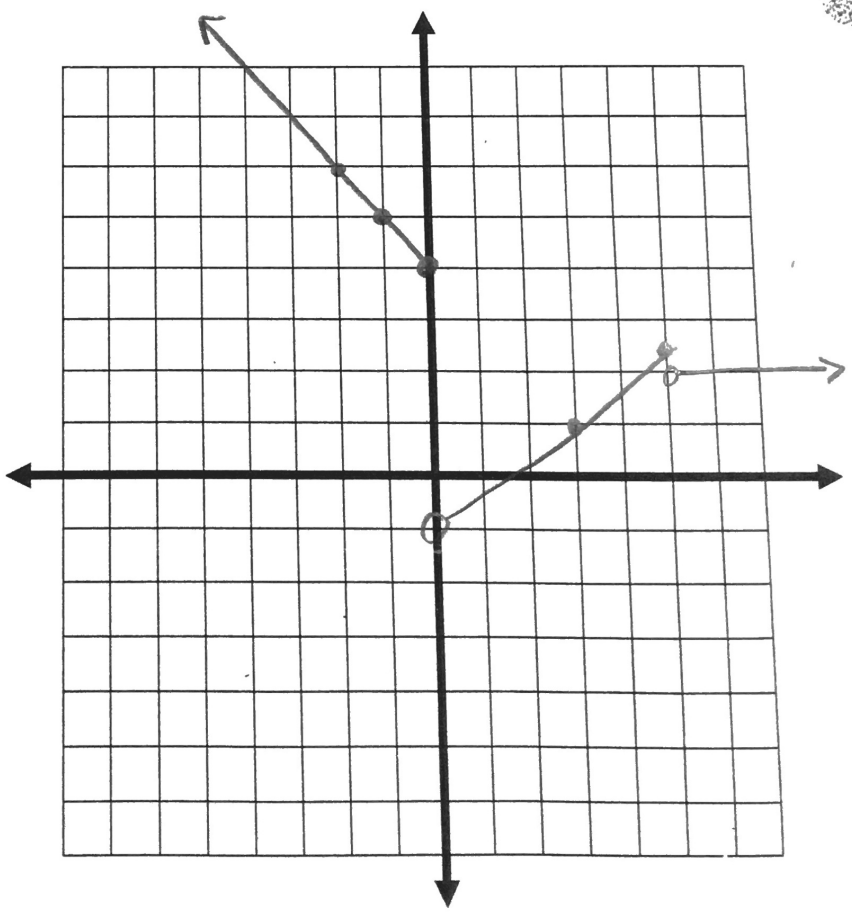
$f(0)=4$

$f(5)=2\frac{1}{3}$

X	y
0	4
-1	5
-2	6

X	y
0	-1
3	1
5	$2\frac{1}{3}$

X	y
5	2
6	2
7	2



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

Continuous or Discontinuous

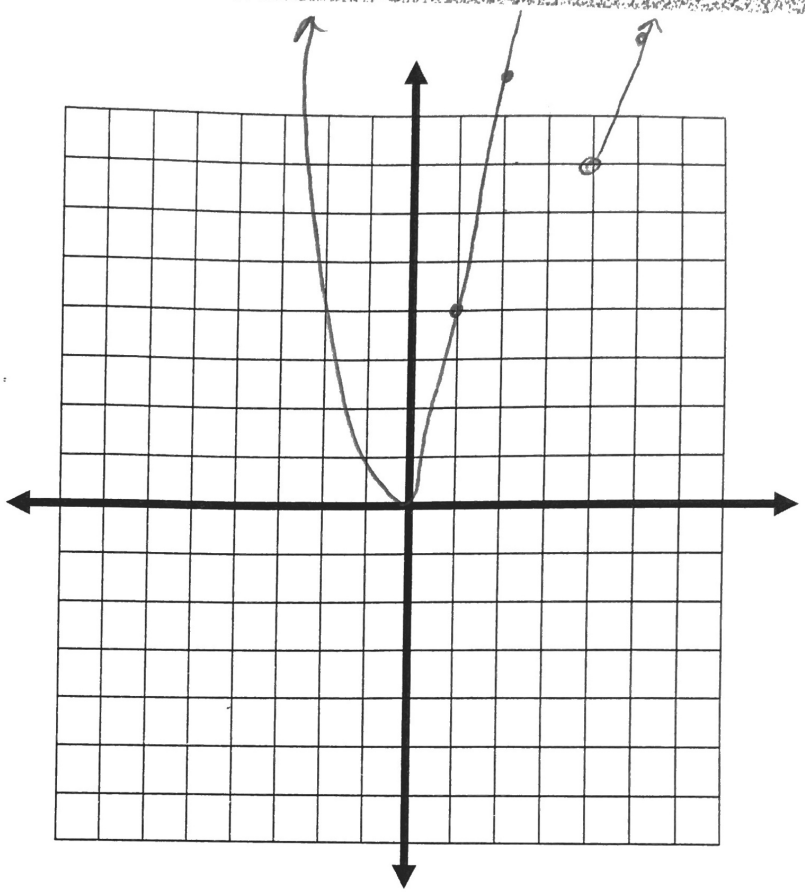
$f(-4) = 16$

$f(0) = 0$

$f(3) = 9$

x	y
4	7
5	10
6	13

x	y
4	16
3	9
2	4



6. $\begin{cases} 4 & x \le -2 \\ x^2 & -2 < x < 2 \\ 4 & x \ge 2 \end{cases}$

Continuous or Discontinuous

$f(-4) = 4$

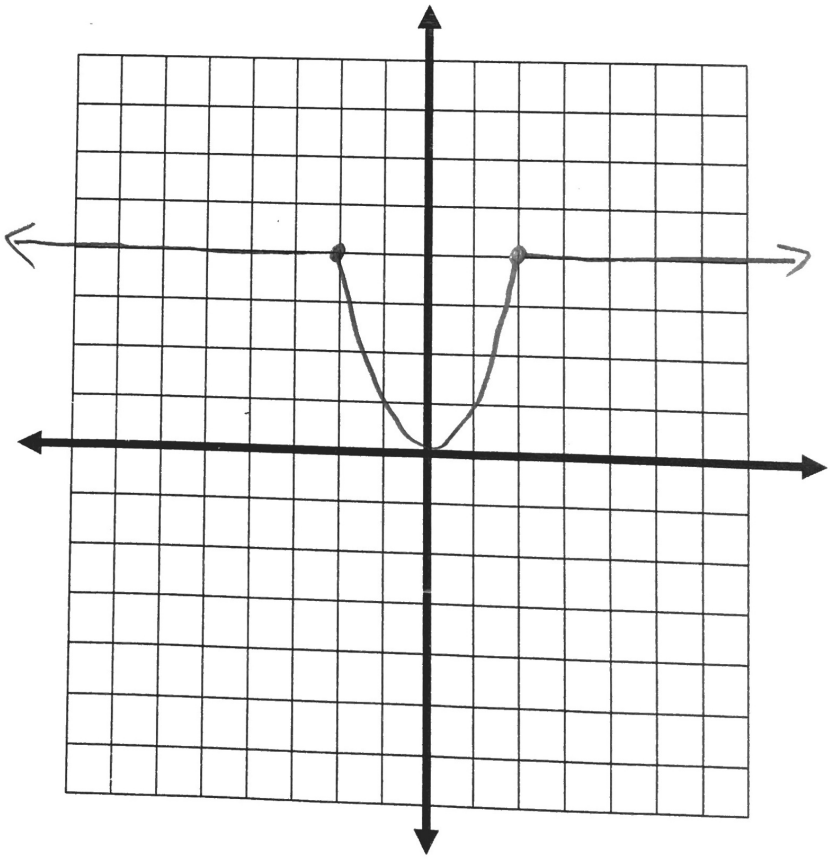
$f(0) = 0$

$f(3) = 4$

x	y
-2	4
-3	4
-4	4

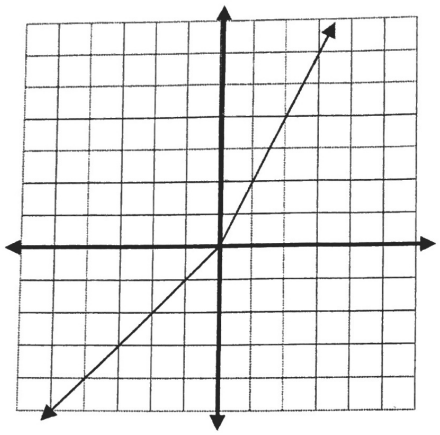
x	y
-2	4
0	0
2	4

x	y
2	4
3	4
4	4



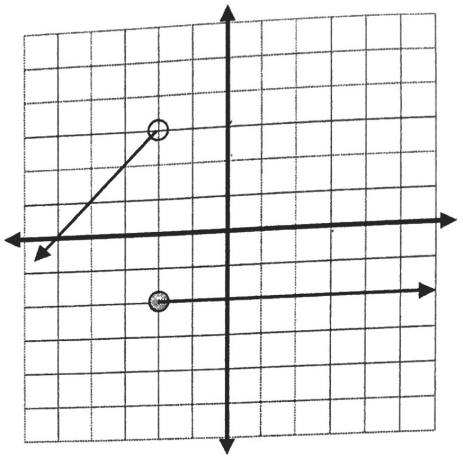
Part II. Write equations for the piecewise functions whose graphs are shown below. Assume that the units are 1 for every tic marc.

7.



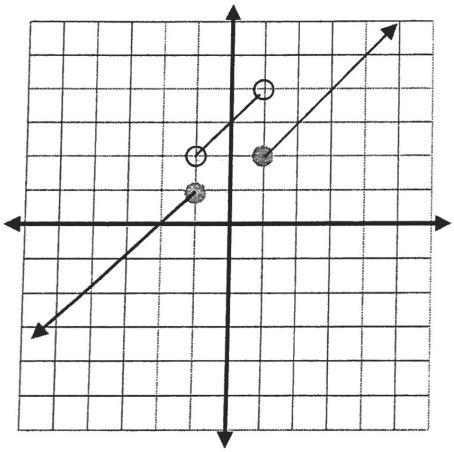
$$f(x)=\begin{cases}2x & x\geq 0\\ x & x<0\end{cases}$$

8.



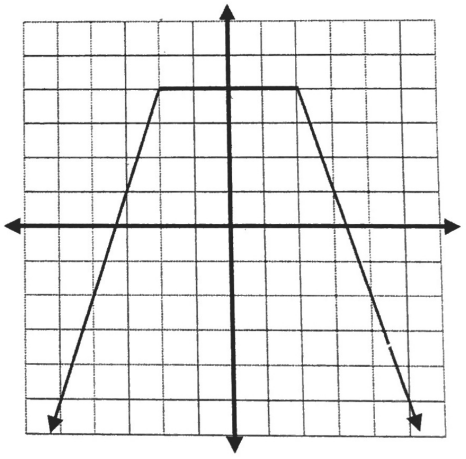
$$f(x)=\begin{cases}x+5 & x<-2\\ -2 & x\geq -2\end{cases}$$

9.



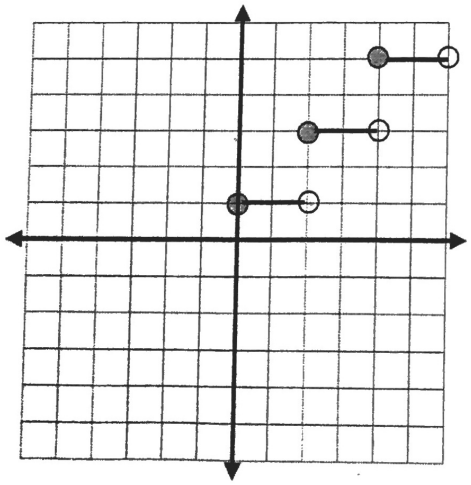
$$f(x)=\begin{cases}x+2 & x\leq -1\\ x+3 & -1<x<1\\ x+1 & x\geq 1\end{cases}$$

10.



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

11.



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