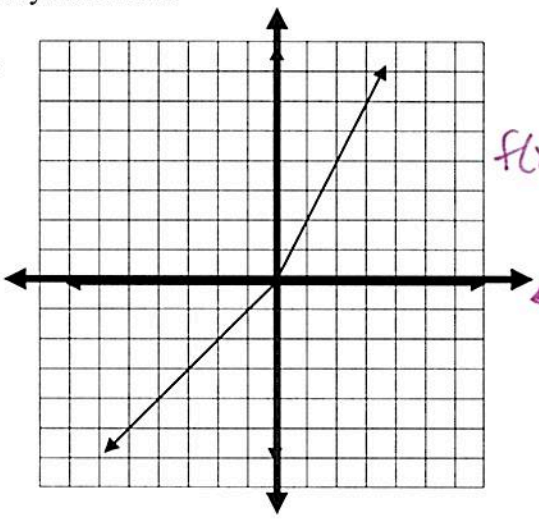
PreAP Precal
Piecewise Functions

name Key

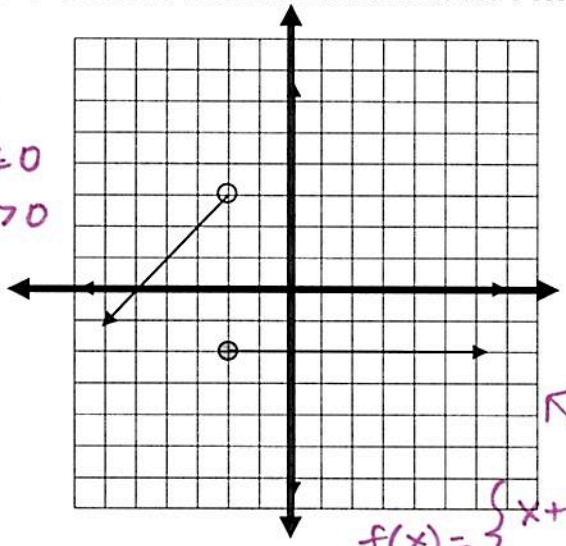
Write equations for the piecewise functions whose graphs are shown below. Assume that the units are 1 for every tick mark.

1.



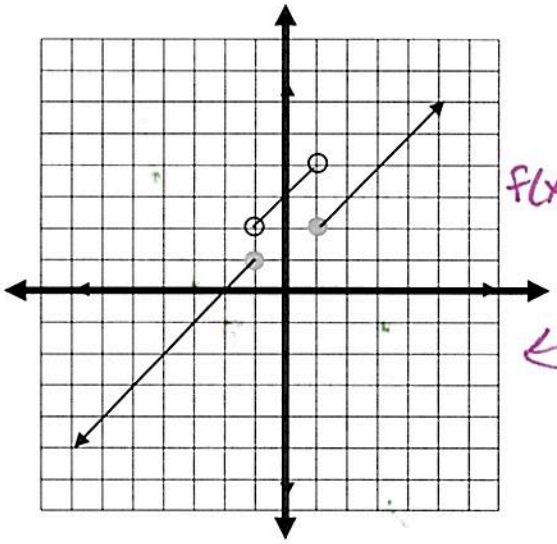
$f(x) = \begin{cases} x, & x \le 0 \\ 2x, & x > 0 \end{cases}$

2.



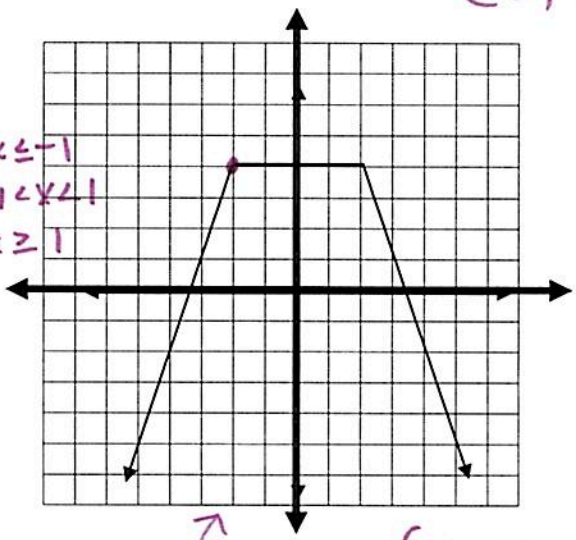
$f(x) = \begin{cases} x+5, & x < -2 \\ -2, & x \ge -2 \end{cases}$

3.



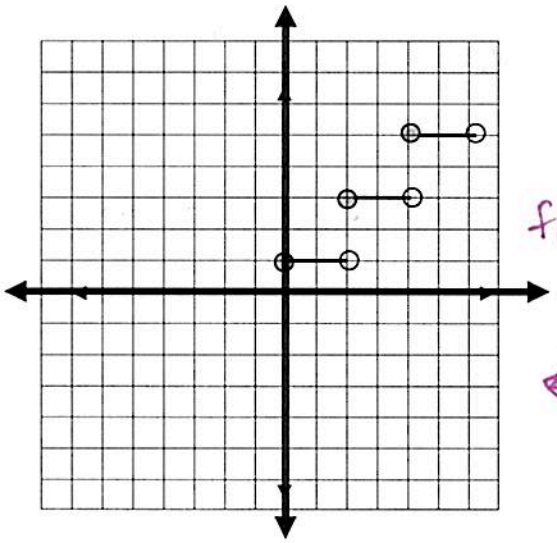
$f(x) = \begin{cases} x+2, & x \le -1 \\ x+3, & -1 < x < 1 \\ x+1, & x \ge 1 \end{cases}$

4.



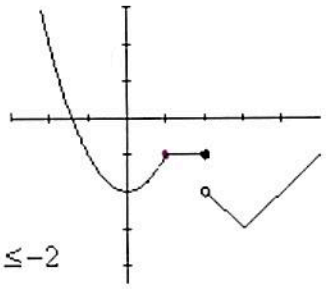
$f(x) = \begin{cases} 3x+10, & x \le -2 \\ 4, & -2 < x < 2 \\ -3x+10, & x \ge 2 \end{cases}$

5.



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

6. Which of the following piecewise functions is represented by this graph?



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

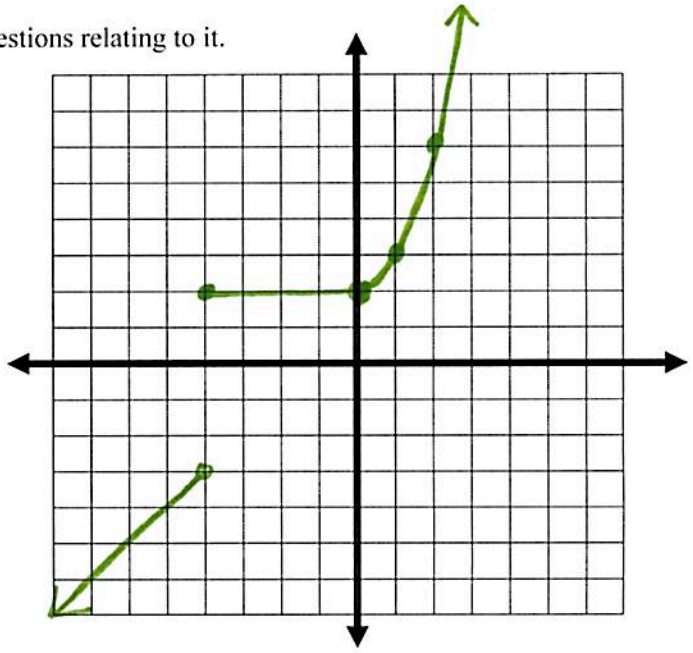
c. $f(x)=\begin{cases} x^2-2 & x\le -2 \\ -1 & -2<x<3 \\ |x-3|-3 & x\ge 3 \end{cases}$

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

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

7. Graph the following piecewise function and then answer questions relating to it.

$$f(x)=\begin{cases} x+1, & x<-4 \\ 2, & -4\le x<0 \\ x^2+2, & x\ge 0 \end{cases}$$



Find the following values:

f(6) = 38

f(-4) = 2

f(0) = 2

f(3) = 11

What is the absolute maximum? ∞ The absolute minimum? $-\infty$

Find the interval(s) on which the function is increasing. $(-\infty, 4)$ and $(0, \infty)$

Find the interval(s) on which the function is decreasing. none

Find the interval(s) on which the function is constant. $(-4, 0)$

Where is the function discontinuous? $x=-4$

What is the rate of change on the interval (-6, -4)? 1