AP Calculus AB
Unit 1 Worksheet 3 – Piecewise Functions

Name: KEY
Date: _____ Block: ___

Section 1 – Evaluate the following piecewise functions.

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

a.) $g(0)$

1

b.) $g(6)$

$(6)^2 - 1$
$36 - 1$
35

c.) $g(-2)$

1

2. $h(x) = \begin{cases} \frac{1}{x}, & x > 3 \\ 2x, & x \le 3 \end{cases}$

a.) $h(-4)$

$2(-4)$
-8

b.) $h(4)$

$\frac{1}{4}$

c.) $h(3)$

$2(3)$
6

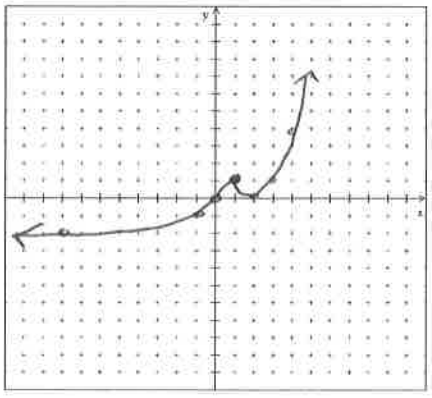
d.) $h(t^2+5)$

always greater than 3 for any value of t.

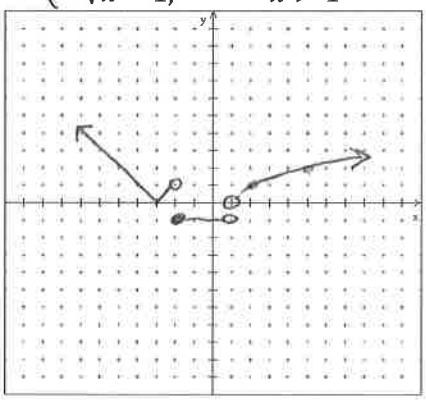
$\frac{1}{t^2+5}$

Section 2 – Graph each of the following piecewise functions.

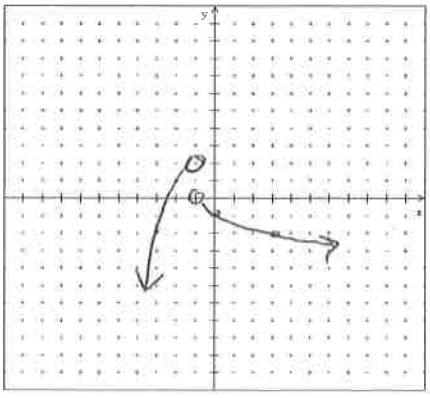
3.) $f(x) = \begin{cases} \sqrt[3]{x}, & x \le 1 \\ (x-2)^2, & x > 1 \end{cases}$



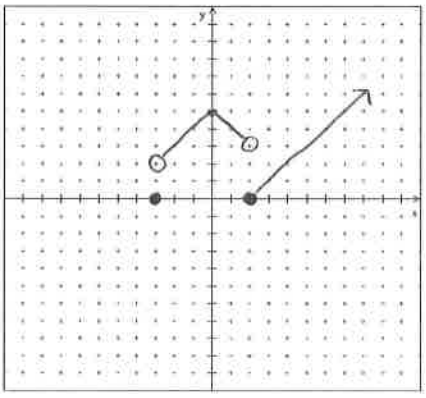
4.) $f(x) = \begin{cases} |x+3|, & x < -2 \\ -1, & -2 \le x < 1 \\ \sqrt{x-1}, & x > 1 \end{cases}$



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

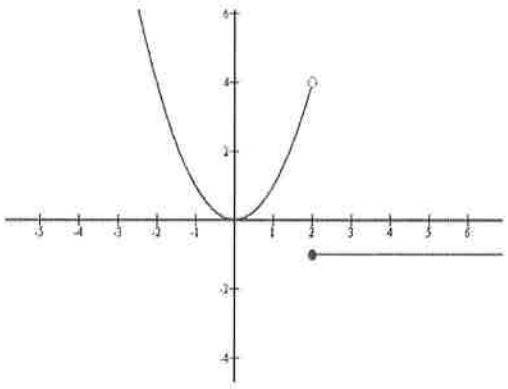


6.) $f(x) = \begin{cases} -\sqrt{x+3}, & x \le -3 \\ -|x| + 5, & -3 < x < 2 \\ x - 2, & x \ge 2 \end{cases}$



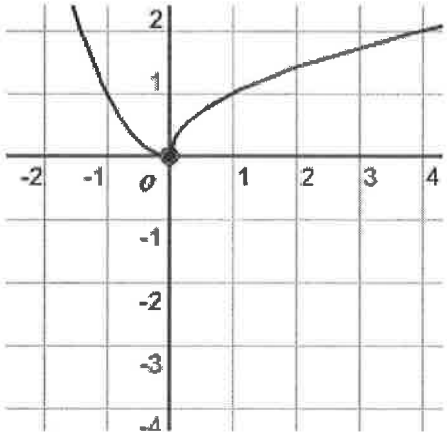
Section 3 – Write a function that describes each of the piecewise functions below.

7.



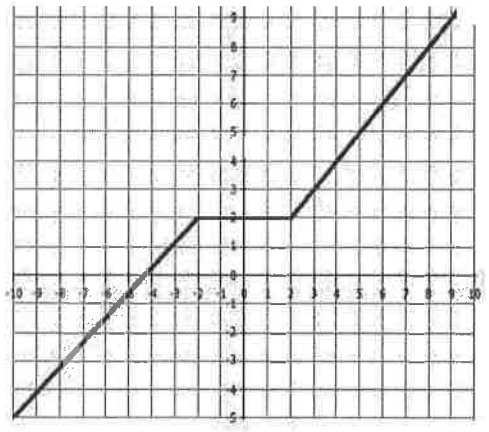
$$f(x) = \begin{cases} x^2, & x < 2 \\ -1, & x \geq 2 \end{cases}$$

8.



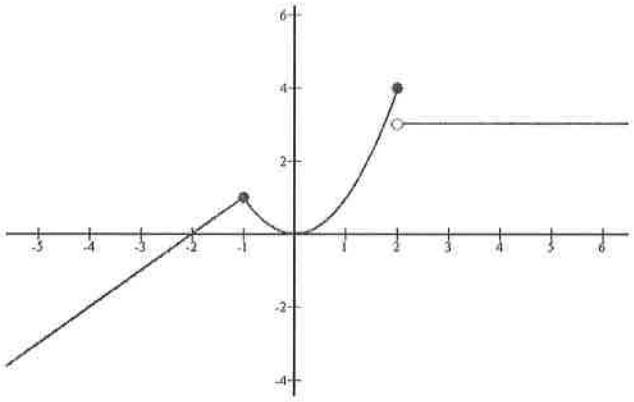
$$f(x) = \begin{cases} x^2, & x < 0 \\ \sqrt{x}, & x \geq 0 \end{cases}$$

9.



$$f(x) = \begin{cases} x+4, & x < -2 \\ 2, & -2 \leq x \leq 2 \\ x, & x > 2 \end{cases}$$

10.



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