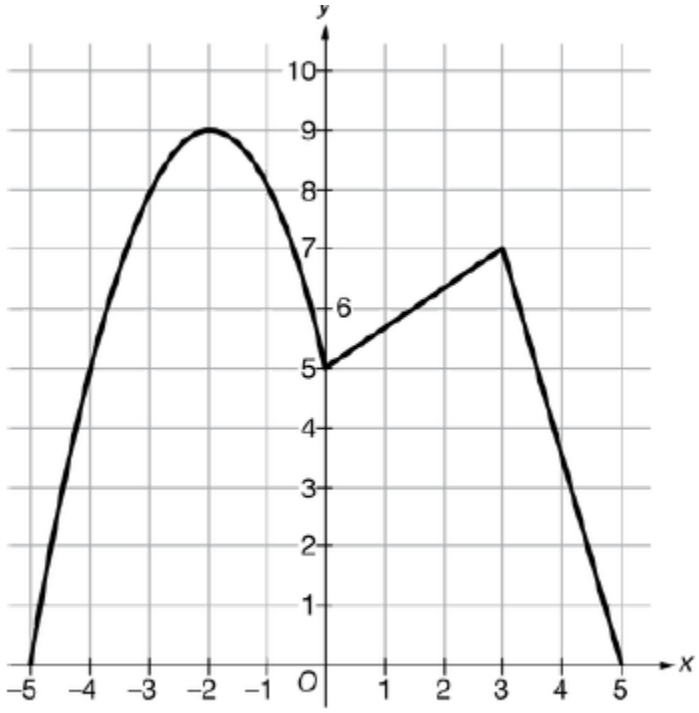
Name_____ **AP Classroom Unit 4 – Curve Sketching**

Reminder: Multiple Choice #1-8 are on AP Classroom. You will submit only the free response on paper. This is due Monday, October 21st.



Graph of f

The continuous function f is defined on the closed interval $[-5,5]$. The graph of f consists of a parabola and two line segments, as shown in the figure above. Let g be a function such that $g'(x) = f(x)$

a) Fill in the missing entries in the table below to describe the behavior of f' and f''. Indicate Positive, Negative, or 0. Give reasons for your answers.

$\boldsymbol{x}$	$\boldsymbol{-5 < x < -2}$	$\boldsymbol{-2 < x < 0}$	$\boldsymbol{0 < x < 3}$	$\boldsymbol{3 < x < 5}$
$\boldsymbol{f(x)}$	Positive	Positive	Positive	Positive
$\boldsymbol{f'(x)}$				
$\boldsymbol{f''(x)}$				

b) There is no value of x in the open interval $(-1,3)$ at which $f'(x) = \frac{f(3)-f(-1)}{3-(-1)}$. Explain why this does not violate the Mean Value Theorem.

c) Find all values of x in the open interval $(-5,5)$ at which the graph of g has a point of inflection. Explain your reasoning.

d) At what value of x does g attain its absolute maximum on the closed interval $[-5,5]$? Give a reason for your answer.