# **Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Due: The beginning of class on Friday, January 27th, 2012**

**Pledge: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

# AP Calculus 1

# Problem Set 2, Quarter 3

Duty, Sulkes

**Directions:** This problem set is pledged. You may only work **with** (not copy) students currently in A.P. Calculus 1. Be careful and accurate with your solution to each problem. You may use your calculator to check your work, but the analytical solutions must be provided to receive full credit. Leave all answers in exact form (i.e. no decimal approximations). Show all your work in the space provided.

1. Given for the interval .

a. Show that and that .

b. Calculate the absolute extrema. Justify your answer.

c. Determine the x value(s) for any points of inflection. Justify your answer.

d. Sketch the graph of

2. The function has a horizontal tangent and a point of inflection for the same value of *x*. What must be the value of ? Show all the work that leads to your answer.

3. Consider the curve and chord AB joining the points A (-3,15) and B(3,-15) on the curve.

1. Find the x- and y-coordinates of the point(s) on the curve where the tangent line is parallel to the chord AB.
2. Write an expression without absolute value for the vertical distance, V, between the curve and the chord AB for 
3. Find the maximum vertical distance between the curve and the chord AB for 