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

**September 19th, 2011**

**AP Calculus 1, Mrs. Sulkes**

**Continuity – Open and Closed Intervals**

**Definitions:**

**Continuity on an open interval (a,b)** - The function is continuous at every c value in the interval.

Example: Is continuous on (3,10)? Prove using definition.

**Continuity on a closed interval [a,b] –** The function is continuous at every value in the interval (a,b) and  and .

Example: Is  continuous on [-5,0]? Prove using definition.

**Practice:**

1. Let 

* 1. Sketch the graph of f(x) :
  2. Is f(x) continuous on (4,12)? Justify your answer.
  3. Is continuous on [4,12]? Justify your answer.

1. Given f(x) = x3 – x2 + x – 2
   1. Sketch the graph of f(x) on the interval [0,3].
   2. Is f(x) continuous on [0,3]? Justify your answer, analytically.

For #3 – 6 below,: a. Sketch the graph and b. Determine whether or not the function is continuous on the interval. If you believe that the function is **not** continuous, state why not (using the definition of continuity).

3. f(x) = x2 + 1; (-3,3) 4. g(x) = ; (0,4)

5. h(x) =  [1,5] 6. k(x) =  [-4,4]

7. Given 

1. Find f(-1) and f(1).
2. Find  and .
3. Is f(x) continuous at x = 1? Explain using the definition of continuity at a point.
4. Is f(x) continuous at x = -1? Explain using the definition of continuity at a point.

8. Given , find the value(s) of b and c so that f(x) is

continuous at x =1 and -1.