Calculus: Inclass Homework 3

October 11th, 2007

1. Find all c such that the following function

$$f(x) = \begin{cases} cx + 5, & \text{if } x \leq 1; \\ x^2 + 2x + c^2, & \text{if } x > 1, \end{cases}$$

is continuous on $(-\infty, \infty)$.

2. A function is called *even* if $f(-x) = f(x)$ for all x and *odd* if $f(-x) = -f(x)$ for all x.

   (a) Use the definition of the derivative to show that the derivative of an even function is odd.

   (b) Explain the previous result by using the interpretation of the derivative as slope of the tangent.