Calculus: Inclass Homework 4

October 18th, 2007

1. Consider the following function

$$f(x) = \begin{cases} x^2, & \text{if } x \leq -2; \\ 8 - x^2, & \text{if } -2 < x \leq 2; \\ -4x + 3, & \text{if } x > 2. \end{cases}$$

For which x is the function differentiable? What is the derivative?

2. Find all b such that

$$\lim_{x \to 0} \frac{\sqrt{1 + \cos(x)} - \sqrt{2 - \tan(bx)}}{x} = \sqrt{2}.$$