Take-Home Quiz 3

Math 131 Section 22

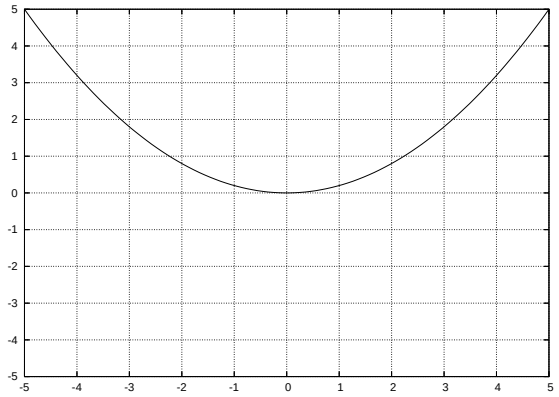
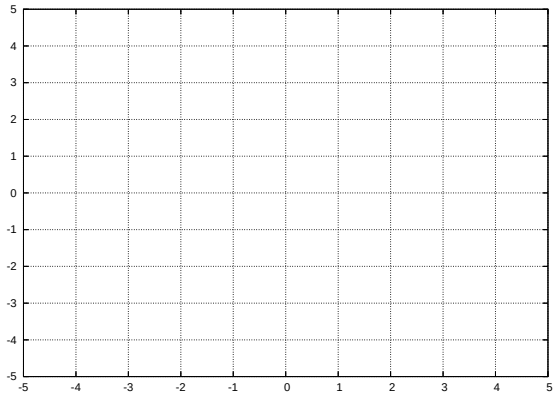
Due Monday, October 31, 2005

Problem 1. (3 points). Let $f : \mathbb{R} \to \mathbb{R}$ be a differentiable function. Prove f is continuous.

Problem 2. (3 points). Give an example of a continuous function $f : \mathbb{R} \to \mathbb{R}$ which is differentiable on $(-\infty, 0) \cup (0, 1) \cup (1, \infty)$ but fails to be differentiable at 0 and 1.

Problem 3. (3 points). Define $f : \mathbb{R} \to \mathbb{R}$ by $f(x) = 2x - x^2$. Prove, using the definition of derivative, that $f'(x) = 2 - 2x$.

Problem 4. (2 points). Sketch the derivative of the left-hand graph on the empty right-hand graph.

Problem 5. (2 points). Sketch the derivative of the left-hand graph on the empty right-hand graph.