# Homework #3

*Reminder: Midterm #1 is on Wednesday 2/6.*

| 1 | Suppose that $f : (a, b) \to \mathbb{R}$ is differentiable at all points of its domain. Prove that if $f'(x) = 0$ for all $x \in (a, b)$ then $f$ is a constant function. |

| 2 | Suppose that $f, g : \mathbb{R} \to \mathbb{R}$ are such that $f$ is differentiable at the point $x = a$ but $g$ is not. Prove or disprove: $f + g$ is differentiable at the point $x = a$. |