Math 1A: Quiz 3 Name: _____

GSI: Theo Johnson-Freyd Wednesday, 11 February 2008

You must always justify your answers. This means: show your work, show it neatly, and when in doubt, use words (and pictures!) to explain your reasoning. No justification = no points.

1. (4 pts) For what value of c is the function $f(x)$ continuous on $(-\infty, \infty)$?

$$f(x) = \begin{cases} cx^2 + 3x - 1 & \text{if } x < 1 \\ c(x-2) + 4 & \text{if } x \geq 1 \end{cases}$$

2. (6 pts) Assume that you've found a constant c so that $f(x)$ from the previous problem is continuous on $(-\infty, \infty)$. Use the intermediate value theorem to show that the equation $f(x) = 0$ has a solution in the interval $[0, 2]$. Be sure to state the conditions of the theorem, and why $f(x)$ satisfies the conditions.

3. (bonus) On the back of this page, explain a concept from this course that you don't understand, but explain what you don't understand about it well enough that someone not in this course can understand the question.