

Math 150A, Fall 2007, Section 18
Quiz 3

Name:

Show your work. No work, no credit.

1. Determine whether the function f defined by

$$f(x) = \begin{cases} x + 3, & \text{if } x = 2, \\ x^2, & \text{if } x \neq 2, \end{cases}$$

is continuous at 2. If applicable, name the type of discontinuity.

2. State the Intermediate Value Theorem for a function f defined on $[0, 1]$.

3. Explain why the function f defined by

$$f(x) = \begin{cases} \frac{\sin x}{x}, & \text{if } x > 0, \\ x^4 + 1, & \text{if } x \leq 0, \end{cases}$$

is continuous on $(-\infty, 0)$ and on $(0, +\infty)$. In fact, the function f is continuous on $(-\infty, +\infty)$.

Using this result, explain why the function g defined by

$$g(x) = \begin{cases} 2 \frac{\sin x}{x} + 1, & \text{if } x > 0, \\ 2(x - 1)^2 + 1, & \text{if } x \leq 0, \end{cases}$$

is continuous at 0.

Pledged

Honor code: I have neither given nor received help on this quiz.