Math 1271 Quiz 7

March 27, 2014

Name: _____
TA: _____

NO CALCULATORS. NO HANDHELD DEVICES. NO BOOKS OR REFERENCE MATERIALS OF ANY KIND.
Time allowed: 20 minutes; Grader: Ashley Earls. Good luck!

1. Let $f(x) = 2x^2 - 3x + 1$.

   (a) (*20 points*) Verify that f satisfies the hypotheses of the Mean Value Theorem on the interval $[0, 2]$.

   (b) (*15 points*) Find all numbers c that satisfy the conclusion of the Mean Value Theorem.

2. (*15 points, no partial credit*) Let $f(x) = \tan(x)$. Note that $f(0) = f(\pi) = 0$.

   True or false? By Rolle's Theorem, there exists $c \in (0, \pi)$ with $f'(c) = 0$.

   True

   False

3. (*15 points, no partial credit*) Let $f : \mathbb{R} \to \mathbb{R}$ be any continuous function.

   True or false? If $f(7) = 12$, $f'(7) = 0$, and $f''(7) = 3$, then f has a local minimum at $x = 7$.

   True

   False

4. (*35 points*) Let $f(x) = x - x^2 - \ln(x)$. Find the maximal intervals of concavity and the inflection points for f.

PLEASE SEE THE OTHER SIDE FOR MORE PROBLEMS.