Name: _____

Math 1300-005 - Spring 2017

Quiz 9 - 3/17/17

On my honor, as a University of Colorado at Boulder student, I have neither given nor received unauthorized assistance on this work.

Signature: _____

Guidelines: You are permitted to use notes, the book, in-class worksheets/solutions, and your classmates on this quiz. Computers and graphing technology of any kind, including calculators, are not allowed (exceptions made for those who have an e-book). Please show all work and clearly denote your answer.

1. In this problem, we shall estimate $(3.996)^{1/2}$.

   (a) Let $f(x) = x^{1/2}$. Find the linearization, $L(x)$, of f at $a = 4$.

   (b) Use $L(x)$ from part (a) to estimate $(3.996)^{1/2}$.

   (c) Is your answer from (b) and overestimate or underestimate? You must justify your answer (hint: draw an appropriate tangent line).

2. Find the following derivatives.

(a) $f(x) = \log_5(xe^x)$

(b) $g(x) = \arctan(\ln(2x))$.

3. Use logarithmic differentiation to find the derivative of

$$y = (\cos(x))^x$$

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