Math 114 Fall 2007

BONUS Quiz **2**   BASIC CALCULUS I

Name: _____

Date: _____

Math 110
Wednesday, October 10, 2007
Ron Buckmire

Time Begun: _____

Time Ended: _____

Topic: Differentiation Rules

The idea behind this quiz is to assess your understanding of the rules of differentiation. Particularly when you can use the Product and Quotient Rules and when you can not.

Reality Check:

EXPECTED SCORE : _____/**10**   ACTUAL SCORE : _____/**10**

Instructions:

0. Before you open the quiz, look at the hint at `http://faculty.oxy.edu/ron/math/110/07`

1. Once you open the quiz, **you have 60 minutes to complete it**.

2. You may not use your text or any other source, including course materials. You may use a calculator. You must work alone. Do not discuss the contents of this quiz with anyone.

3. If you use your own paper, please staple it to the quiz before coming to class. If you don't have a stapler, buy or borrow one. UNSTAPLED PAPERS WILL NOT BE GRADED.

4. After completing the quiz, sign the pledge below stating on your honor that you have adhered to these rules.

5. Your solutions must have enough details such that an impartial observer can read your work and determine HOW you came up with your solution.

6. **This bonus quiz is due on Wednesday, October 17**, at the beginning of class. NO LATE QUIZZES WILL BE ACCEPTED.

Pledge: I, _____, pledge my honor as a human being and Occidental student, that I have followed all the rules above to the letter and in spirit.

SHOW ALL YOUR WORK

Consider the functions $f(x) = |x|$ and $g(x) = x$. Let $P(x) = f(x)g(x)$ and $Q(x) = \dfrac{f(x)}{g(x)}$.

a. *(3 points.)* Compute $P'(1)$ and $Q'(1)$ or explain why these derivatives do not exist. (HINT: Can you use the Product and Quotient Rules or do you have to compute the derivatives algebraically?)

b. *(3 points.)* Compute $P'(0)$ and $Q'(0)$ or explain why these derivatives do not exist. (HINT: Can you use the Product and Quotient Rules or do you have to compute the derivatives algebraically?)

c. *(2 points.)* Sketch a graph of $P(x)$ (on the left axes) and $P'(x)$ (on the right axes).
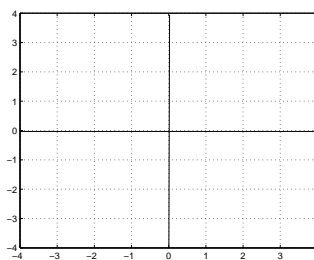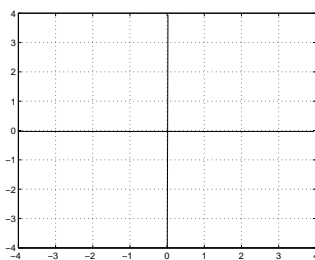
d. *(2 points.)* Sketch a graph of $Q(x)$ (on the left axes) and $Q'(x)$ (on the right axes).