Quiz **6**   Experienced Calculus I

Name: _____

Friday, October 14, 2005

Date: _____

Time Begun: _____

Time Ended: _____

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Angela Gallegos

Topic: Composition of Functions and Rules of Differentiation

This quiz is intended to provide you with an opportunity to illustrate your facility with differentiation and the all-important Chain Rule.

Reality Check:

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

Instructions:

0. Before you open the quiz, check the course website or Blackboard for a hint.

1. Once you open the quiz, **you have 30 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 quiz is due on Monday, 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.

EXPLAIN EVERY ANSWER!

1. Use the different functions $f(x) = 3^{(x^2)}$ and $g(x) = (3^x)^2$ for all parts of this quiz.

a. (*4 points*). Write $f(x)$ and $g(x)$ as the composition of two functions of your choosing, p and q, such that $f = p \circ q$ and $g = q \circ p$. **Confirm** that your choice for p and q satisfy the confition that $q(p(x)) = g(x)$ and $p(q(x)) = f(x)$.

b. (*4 points*). **Find** the derivatives $f'(x)$ and $g'(x)$.

c. (*2 points*). **Evaluate** $f'(1)$ and $g'(1)$.