BONUS Quiz **4**   **Multivariable Calculus**

Name: _____

Date: _____   **Friday October 7**
Time Begun: _____   Ron Buckmire
Time Ended: _____

Topic : Approximating A Multivariable Function

The idea behind this quiz is to provide you with an opportunity to illustrate your understanding of Taylor Approximation of a Multivariable Function.

Reality Check:

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

Instructions:

0. Please look for a hint on this quiz posted to `faculty.oxy.edu/ron/math/212/05/`.

1. Once you open the quiz, you have **30 minutes** to complete, please record your start time and end time at the top of this sheet.

2. You may use the book or any of your class notes. You must work alone.

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 one.

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. Relax and enjoy...

7. **This quiz is due on Monday October 10**, in 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.

1. Consider Buckmire's favorite multivariable function $f(x, y) = x^y$.

(a) (*4 points.*) Obtain an estimate of $1.1^{1.2}$ using an appropriate tangent plane approximation.

(b) (*2 points.*) Similarly to (a), obtain an estimate of $1.2^{1.1}$.

(c) (*4 points.*) Which estimate, (a) or (b), is larger? Explain how this result could be predicted from your knowledge about the tangent plane to $f(x, y) = x^y$.