Math 370 Spring 2009

QUIZ 2 Numerical Analysis

Name: _____

Friday February 6
Prof. Ron Buckmire

Time Begun: _____
Time Ended: _____

Topic : Rates of convergence of functions

The idea behind this quiz is for you togive you an opportunity to demonstrate your understanding of the relative rates of convergence of functions, grow more familiar with $\mathcal{O}$ and o notation, and to practice your ability to find limits.

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/370/09/`
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. QUIZZES WITH UNSTAPLED SHEETS 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. Relax and enjoy...
7. **This quiz is due on Monday February 9**, in class. NO LATE OR UNSTAPLED 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.

Math 379 Spring 2009 **SHOW ALL YOUR WORK** Quiz **Two**

1. Consider each of the following expressions $f(h)$ as $h \to 0$. Express each of them in the form $f(h) = L + \mathcal{O}(h^\alpha)$ with the "best" (most accurate) integer values of $\alpha > 0$. For each problem write down a value of α and L. You may use any method you like to find your gauge function h^α but show all your work and name the method you use in each case.

a. e^{e^h}

b. $(1 - h^2)^{-1}$

c. $\dfrac{\ln(1+h)}{h}$

d. $\cos(h^2)$

e. $1 + \sin(h^3)$