

QUIZ 3

Numerical Analysis

Name: _____

Date: _____

Friday September 17

Time Begun: _____

Ron Buckmire

Time Ended: _____

Topic : Rates of convergence of functions

The idea behind this quiz is for you to give 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:

1. Once you open the quiz, you have as much time as you need to complete it, but 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 September 20, 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 each of the following expressions $f(h)$ as $h \rightarrow 0$. 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 .

a. e^{h^2}

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

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

d. $\cos(h^2)$

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