Math 370 Fall 98

Quiz 8

Numerical Analysis

Name: ______________________________

Date: ____________________

Time Begun: ____________________

Time Ended: ____________________

Friday November 20

Ron Buckmire

Topic : Numerical Differentiation

The idea behind this quiz is for you to show how you would approximate a derivative of an unknown function at a point.

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 November 30**, 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.

Math 370 Fall 1998 **EXPLAIN YOUR ANSWERS** Quiz **8**

Recall the following data for an unknown function $f(x) = c_1 x^{c_2}$

x	1.0000	2.0000
y	2.2361	10.9329

1. *2 points* Find (second-order) $O(h^2)$ approximations for $f'(2.0)$ and $f'(5.5)$

2. *3 points* Use your answers from **(1)** to find an $O(h^2)$ approximation for $f''(4.0)$

3. *3 points* Using the *ideas* (not the answers) from **(1)** and **(2)** t ry and compute an $O(h^2)$ approximation to $f^{(3)}(4.0)$

4. *2 points* Can you find error bounds for these approximations? Why or Why not?