

Quiz 1

Name: _____

Date: _____

Time Begun: _____

Time Ended: _____

Monday, September 9, 20

Ron Buckm

Topic covered: Initial Value Problems and Euler's Method

The idea behind the quiz is for you to illustrate your understanding of solutions of initial value problems and your ability to approximate these functions at particular values.

Instructions:

1. Once you open the quiz, you have 30 minutes to complete it.
2. You **may not** use the book or any of your class notes, but you may use a calculator. 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. Relax and enjoy....
6. **This quiz is due on Wednesday, September 11**, 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.

Consider the initial value problem (IVP)

$$y' = k(y - b), \quad y(0) = A$$

1. [4 points] Show that the exact solution to the IVP is $y(t) = b + (A - b)e^{kt}$.
2. **(a)** [4 points] If $A = 15, b = 2, k = -.04$ use Euler's Method with $\Delta t = 1$ to estimate the value of $y(1)$.
3. **(b)** [2 points] Compare the exact value of $y(1)$ to the approximate value obtained in **2 (a)**. Which is bigger?