

Quiz 4

BASIC CALCULUS I

Name: _____

Date: _____

Time Begun: _____

Time Ended: _____

Math 110

Friday, October 5, 2007

Prof. Ron Buckmire

Topic covered: Derivatives, Tangents, Rates of Change

The idea behind this quiz is to assess your understanding of derivatives, computationally, analytically and graphically.

Reality Check:

EXPECTED SCORE : _____/10

ACTUAL SCORE : _____/10

Instructions:

1. Once you open the quiz, **you have 30 minutes to complete it.**
2. You may not use the book, any of your class notes. You may use a graphing calculator. You must work alone and not communicate with any student any information about your answers or the quiz itself.
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. **This quiz is due on Monday, October 8**, 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.

SHOW ALL YOUR WORK AND EXPLAIN ALL YOUR ANSWERS

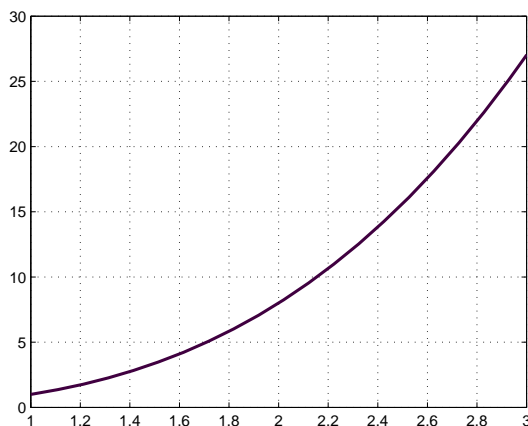
We want to use the information about the function $g(t) = t^3$ to find the equation of the tangent line to $g(t)$ at the point $(2, g(2))$.

t	1.900	1.990	1.999	2.000	2.001	2.010	2.100
$g(t)$	6.859	7.881	7.988	8.000	8.012	8.121	9.261

a. (4 points.) Use the following table to produce a sequence of successive approximations in order to find the **exact value** of the slope of the curve $g(t) = t^3$ at the point $(2, g(2))$.

b. (2 points.) Use your answer from (a.) about the exact value of the slope of the curve at $t = 2$ to find the equation of the tangent line to the curve at the point $t = 2$.

c. (2 points.) Sketch the tangent line to the curve at $t = 2$ on the graph below. (Make sure your sketch touches the t -axis and the line $t = 3$.)



d. (2 points.) Which is greater, the average rate of change of the function $g(t) = t^3$ on the interval $[1, 3]$ or the instantaneous rate of change of $g(t)$ at the point $t = 2$? EXPLAIN YOUR ANSWER.