Name:_____

Pledged:_____

Rhodes College
Math 115: Applied Calculus
Module 2 Exam
October 10, 2008

Problem	Points	Score
1	20	
2a	10	
2b	10	
2c	10	
2d	10	
2e	10	
3a	15	
3b	15	
Total	100	

SHOW ALL WORK. May the force be with you.

1. (20 points) Determine the derivative of

$$f(x) = \frac{3}{x}$$

directly from the (limit) definition; i.e. the "Three-Step Method." **Show your work.**

2. (50 points) Find the derivative of each of the following functions. You may use any of the shortcuts we have studied. You are encouraged **not** to simplify your answers. Really. Take the derivative. That's all.

a. (10 points)

$$f(x) = 3x^7 - 5\sqrt{x}$$

b. (10 points)

$$g(x) = \frac{2}{\sqrt[5]{x}} + \frac{5}{x^3}$$

c. (10 points)

$$G(t) = e^x \sin(2x)$$

d. (10 points)

$F(x) = 7e^{x^2-13x-11}$

e. (10 points)

$\Gamma(x) = \frac{\cos x + 4e^x}{\ln x}$

3. (30 points) Find an equation of the tangent line to each curve at the point $(a, f(a))$.

a. (15 points)

$f(x) = 5^x$ with $a = 4$

b. (15 points)

$f(x) = x^4 + 3x^2 + 1$ with $a = 5$