



Math 121 Calculus II

Spring 2009

Test #3

Instructor: Joyce Servatius

Name (printed): _____

Signature: _____

This exam is CLOSED NOTES and CLOSED BOOK. There are NO CALCULATORS allowed.

To get full credit you must show all work neatly in the space provided on the test paper.

1. (40 pts) Evaluate the following derivatives.

a. $\frac{d}{dx} [(1+x)\arcsin(1-x)]$

b. $\frac{d}{dx} [2^{3x} - 3^{2x}]$

[Problem 1 continues on page 2]

c. $\frac{d}{dx} x^{5 \ln(2)}$

d. $\frac{d}{dx} (1 + 2x)^{2x}$

2. (40 pts) Evaluate the following integrals.

a. $\int 3^x dx$

b. $\int 3xe^{3x} dx$

[Problem 2 continues on page 4]

c. $\int \frac{2}{4x^2 + 9} dx$

d. $\int e^x \cos(x) dx$

4. (10 pts.)

Experiment shows that after 16 years, 19 percent of a radioactive substance has decayed.

a) What is the half life of the substance?

b) Given an initial amount of 90 lbs, how much remains after 8 years?

5. (10 pts) Consider the integral $\int x \sin(x^2) \cos(x^3) dx$.

Transform the integral using integration by parts taking $u = \cos(x^3)$.

[DO NOT EVALUATE THE INTEGRAL FURTHER]

Prob	Pts
1	
2	
3	
4	
5	
Total	