Math 126 C - Winter 2006
Mid-Term Exam Number One
January 31, 2006

Name: _____   Section: _____

1	10	
2	10	
3	10	
4	10	
5	10	
6	10	
7	10	
Total	70	

- Complete all questions.

- You may use a scientific, non-graphing calculator during this examination. Other electronic devices are not allowed, and should be turned off for the duration of the exam.

- If you use a trial-and-error or guess-and-check method, or read a numerical solution from a graph on your calculator, when an algebraic method is available, you will not receive full credit.

- You may use one hand-written 8.5 by 11 inch page of notes.

- Show all work for full credit.

- You have 50 minutes to complete the exam.

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1. Find the 2nd-degree Taylor polynomial, $T_2(x)$ for the function $f(x) = \ln(\ln x)$ based at $x = e$.

2. Approximate the integral
$$\int_0^2 \sin(x^2)\, dx$$
by using the first four non-zero terms of a Taylor series. Given a decimal approximation of your result.

3. Write out the first four terms of the Taylor series for the function

$$f(x) = \frac{1}{1 + 5x} + \frac{1}{3 + x}$$

4. Find the angle between the vectors $\vec{a} =< -3, 4, 1 >$ and $\vec{b} =< 3, 1, 1 >$. Give a decimal value for the angle.

5. Suppose the vector $< x, 3, 2 >$ is orthogonal to the vector $< 2, 3, x >$. Find x.

6. Find the equation of the plane through the three points $(-3, 4, 0)$, $(1, 7, -3)$ and $(2, -5, 3)$.

7. Find the equation of the plane containing the line of intersection of the two planes

$$x + y - z = 3 \quad \text{and} \quad 2x - 3y + 4z = 5$$

and the point $(-2, 7, 3)$.