

Name: _____ Section Number: _____

TA Name: _____ Section Time: _____

Math 20B.

Midterm Exam 2

February 23, 2005

You may use one page of notes, but no other assistance on this exam.

Read each question carefully, answer each question completely, and show all of your work.

Evaluate integrals using methods discussed in the course and show your calculations.

Write your solutions clearly and legibly; no credit will be given for illegible solutions.

If any question is not clear, ask for clarification.

1. (4 points) A radar gun was used to record the speed (in meters per second) of a runner during the first six seconds of a race; the data is recorded in the table below. Estimate the distance the runner traveled during the six seconds using the Midpoint Rule with three subintervals ($n = 3$). (Note: You need not simplify.)

Time (sec)	0	1	2	3	4	5	6
Velocity (meters/sec)	0	7.3	9.7	10.5	10.7	10.8	10.8

#	Score
1	
2	
3	
4	
5	
Σ	

2. (4 points) Evaluate the indefinite integral

$$\int e^{-i2x} \sin(4x) dx.$$

You may leave the result in exponential form.

3. (6 points) Evaluate the following definite integral with an appropriate trigonometric substitution.

$$\int_0^3 \frac{1}{(x^2 + 9)^2} dx$$

4. (4 points) Determine the area of the region $S = \{(x, y) \mid -2 < x \leq 0, 0 \leq y \leq 1/\sqrt{x+2}\}$, if it is finite.

5. (4 points) Evaluate the indefinite integral

$$\int \frac{x^2}{x^2 - 3x} dx.$$