

Math 102, Fall 2007: Practice Exam 1 for the First Midterm

Instructions: This is a practice exam for the first midterm. The first exam will be a 50 minute closed-book exam. We will **not** provide you with a list of integrals or trigonometric identities. Calculators are not allowed and will not be necessary. Partial credit will be awarded for partially correct solutions, so we advise you to **show all work**.

We suggest that you take this practice exam under the conditions listed above for the first midterm. Once you are done, check your answers against the answer key provided, and make corrections as necessary. Please contact your instructor or one of the teaching assistants if you have any questions.

1. Evaluate the following integral using substitution:

$$\int \frac{4x}{\sqrt{25 - 4x^4}} dx$$

2. Using integration by parts, compute the following integral:

$$\int (x \ln x)^2 dx$$

3. Find the following trigonometric integral:

$$\int \cos^2 5x \sin^2 5x dx$$

4. Evaluate the following integral using the method of partial fractions:

$$\int \frac{4x^3 + 4x^2 + 2x - 10}{(x^2 + 4x + 5)(x^2 - 4x - 5)} dx$$

5. Find the following integral using trigonometric substitution:

$$\int \frac{1}{x\sqrt{4 - 9x^2}} dx$$