Math 120 Spring 2001

Quiz **6** BASIC CALCULUS II

Name: _____
Section: 8:30am or 10:30am (circle one)

Math 120
Wednesday, April 4, 2001
Ron Buckmire
Alan Knoerr

Topic covered: Numerical Integration

The point of this quiz is to illustrate your understanding of the differences between different methods of approximating the value of an integral.

Instructions:

1. Once you open the quiz, you have 50 minutes to complete it.
2. Where ever possible indicate your answer clearly, in the form of a sentence, showing all work necessary to understand your solution.
3. You may not use the book or any of your class notes, but you may use a calculator. You must work alone.
4. If you use your own paper, please staple it to the quiz before coming to class. If you don't have a stapler, buy one.
5. After completing the quiz, sign the pledge below stating on your honor that you have adhered to these rules.
6. Relax and enjoy....
7. **This quiz is due on Friday, April 6**, at the beginning of class. NO LATE QUIZZES WILL BE ACCEPTED.

Pledge: I, _____, pledge my honor as a human being and Occidental student, that I have followed all the rules above to the letter and in spirit.

Math 120 Spring 2001 Quiz **6**

SHOW ALL YOUR WORK

1. Using Left-Hand Riemann Sums (L), Right-Hand Riemann Sums (L), the Midpoint method (M) and the Trapezoidal Rule (T) (all with N=50) one obtains the approximations **L**, **R**, **M** and **T** to the number $\mathbf{I} = \int_1^3 \sqrt[5]{x}\ln(x)\,dx$.

(a) *(4 points.)* From looking at the graph of $\sqrt[5]{x}\ln(x)$, the approximate values in the table themselves and your knowledge of each of the numerical methods, fill in the table with the letter (**L**, **R**, **M** or **T**) associated with its approximate value to the integral. and fill in the table with the name of the method associated with the approximate value.

Numerical Method	Approximate value
	1.493173
	1.520544
	1.520643
	1.547916

(b) *(4 points.)* Explain your reasoning for your choices in filling out the table in part **(a)**. In other words, explain how you know the relative sizes of the approximations **L**, **M**, **T**, **R** to the exact value of the integral **I**.

(c) *(2 points.)* Use the entries in the table to produce your best estimate for **I**. (HINT: Use Simpson's Rule!)