

## Quiz 6

DUE: MON. OCT. 20

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Friday October 17

Time Begun: \_\_\_\_\_

Ron Buckmire

Time Ended: \_\_\_\_\_

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**Topic covered:** Numerical Integration

The idea behind the quiz is for you to illustrate your understanding of the relationships between the various numerical methods for evaluating a definite integral.

**Reality Check:**

EXPECTED SCORE : \_\_\_\_\_/10

ACTUAL SCORE : \_\_\_\_\_/10

**Instructions:**

0. Look for a hint about this quiz online, at <http://blackboard.oxy.edu>.
1. Once you open the quiz, you have 30 minutes to complete it.
2. You **may not** use the book or any of your class notes, but you may use a calculator. You must work alone.
3. 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.
4. After completing the quiz, sign the pledge below stating on your honor that you have adhered to these rules.
5. Relax and enjoy....
6. **This quiz is due on Monday, October 20**, at the beginning of class. **NO LATE QUIZZES WILL BE ACCEPTED.**

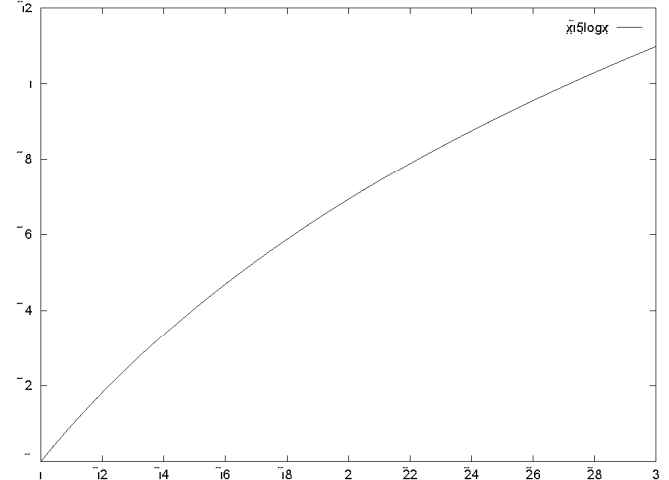
**Pledge:** I, \_\_\_\_\_, pledge my honor as a human being and Occidental student, that I have followed all the rules above to the letter and in spirit.

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**SHOW ALL YOUR WORK**

- (a) [4 points.] Using Left-Hand Riemann Sums (L), Right-Hand Riemann Sums (R), the Midpoint method (M) and the Trapezoidal Rule (T) (all with  $N=50$ ) one obtains the approximations **L**, **R**, **M** and **T** to  $I = \int_1^3 \sqrt[5]{x} \ln(x) dx$ . From looking at the graph of  $\sqrt[5]{x} \ln(x)$ , the values themselves and your knowledge of each of the numerical methods, fill in the table with the letter (**L**, **R**, **M** or **T**) associated with the approximate value to the integral.

| Numerical Method | Approximate value |
|------------------|-------------------|
|                  | 1.493173          |
|                  | 1.520544          |
|                  | 1.520643          |
|                  | 1.547916          |



- (b) [2 points.] For each of the values you filled in the table in part (a), write down your reasons. That is, *explain* how you know the relative sizes of **L**, **R**, **M** and **T**.
- (c) [2 points.] Use the data in the completed table to compute a numerical approximation **S** to the integral using Simpson's Rule.
- (d) [2 points.] Write a formula for **S** using some or all of the symbols **L**, **R**, **M** and **T**