

GEORGIA TECH

SCHOOL OF MATHEMATICS

MATH 1502

CALCULUS II, SECTION K

Quiz # 4

September 29th 2010

First Name : _____

Last Name : _____

The goal is to compute numerically the value of the integral I below, using a numerical integration by slicing the interval into $n = 2$ sub-intervals

$$I = \int_1^2 \frac{dx}{x}$$

1. Compute *analytically* the integral I

(Hint : use the natural logarithm to express the result.)

(Note : the numerical result provided by a computer is indicated below)

$$I =$$

Computer value $I \simeq 0.693147181$

2. Determine : (i) the function f to be integrated, (ii) the interval of integration, (iii) the end points of the slicing and their middle points, (iv) the value of f at those points?

(Hint : compute the results as fractions)

$$f(x) =$$

Interval of integration =

x					
$f(x)$					

3. Compute the *left* points, *right* point and *middle* point approximations.

(Hint : compute the result as fractions)

$$L_2 =$$

$$R_2 =$$

$$M_2 =$$

4. Give the value of I obtained from the trapezoidal rule.

Hint : use $17/24 = 0.708333333$

Compare to the computer value.

$$T_2 =$$

$$\text{Error} =$$

5. Give the value of I given by the Simpson rule.

Hint : use $1747/2520 = 0.693253968$

Compare to the computer value.

$$S_2 =$$

$$\text{Error} =$$

(Use this page for your calculations)