Georgia Tech School of Mathematics
Math 1502

Calculus II, Section D

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

$$I = \int_2^3 \frac{dx}{x}$$

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 $I \simeq .405465108$

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 : use $40/99 = .40404\cdots$*)*

$$f(x) \ =$$

Interval of integration $=$

x					
$f(x)$					

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

$$L_2 \ =$$

$$R_2 \ =$$

$$M_2 \ =$$

4. Give the value of I obtained from the trapezoidal rule.
   Compare to the computer value.

   $T_2 =$

   Error $=$

5. Give the value of I given by the Simpson rule.
   Compare to the computer value.

   $S_2 =$

   Error $=$

(Use this page for your calculations)