

MA2160
Section: R02
Hour Exam#2
Fall 2007
DTL

Name: _____

Score: _____ / 90

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- You must show all of your work to receive credit. Work done only in your head is impossible to grade without major surgery.
 - I am attempting to discover your thinking processes as they relate to mathematics. You must indicate these processes. Do not be tempted by the dark side and do your work in your head without fully explaining what you did. In other words, answers without mathematical support receive ZERO credit.
 - Box in your final answer.
 - NO BOOKS or NOTES can be used on this test.
 - All problems are worth 10 points unless otherwise indicated.
 - Express your answers in "exact" form, except on calculator problem.
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1. Estimate the total distance traveled from $t = 0$ to $t = 6$ using MID(3) using the data in the table below (t is in seconds, v(t) is in feet/sec)

(in other words: approximate $\int_0^6 v(t) dt$)

Time, t	0	1	2	3	4	5	6
Velocity, v(t)	3	4	5	4	7	8	11

2. Evaluate the following **improper integrals** and determine whether they converge or diverge. If they converge, give their value.

a. $\int_2^5 \frac{dx}{(x-2)}$

(10 points)

b. $\int_5^{+\infty} \frac{2}{(x-4)^2} dx$

(10 points)

3. The approximation for a definite integral using $n=10$ is 5.124. The exact value 7. If the approximation was found using SIMP(10) , estimate the value of the integral with $n=30$. That is, estimate SIMP(30) **Calculator use allowed on this question.**

4. Write a Riemann Sum ***and*** then a Definite Integral that would calculate the volume of the cone shown below, using the slice shown. **Do not evaluate the integral.**

5. Write a Riemann Sum and then the definite integral to find the area of the region shown below using the strip shown. **Do not evaluate the integral.**

6. Find the volume of the region bounded by : $y = 1 + x^3$, $x = 1$, $x = 2$ and $y = 0$ when it is revolved about the x-axis. Sketch the region to be rotated. Set up the integral. Find the volume.

7. Find the volume of the region bounded by : $y = 1 + x^3$, $x = 1$, $x = 2$ and $y = 0$ when it is revolved about the line $y = -3$. Sketch the region to be rotated. Set up the integral. Find the volume.

8. Find the volume of the solid whose base is the region bounded by $y = x^2$, $y = 1$, and the y -axis and whose cross sections, perpendicular to the x -axis, are squares. Sketch the region. Set up the Integral. Find the volume.

