

Your Name

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Your Signature

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Student ID #

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Quiz Section

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PLEASE READ the DIRECTIONS below:

- Do not open the test until instructed to do so. This test has 5 problems on 5 pages. Once the test starts, please check that you have a complete exam.
- This exam is closed book. You may use one $8\frac{1}{2} \times 11$ page of handwritten notes. Do not share notes.
- Only a Ti-30x IIS calculator is allowed. Silence your cell phone and put it away.
- In order to receive credit, you **MUST SHOW YOUR WORK**. If we cannot tell how you are getting your answers, you may receive little or no credit, even if the answer happens to be correct.
- Simplify your answers as much as possible but leave them in exact form (e.g. $\pi\sqrt{2} + \frac{1}{2}$). Do not give decimal approximations, unless otherwise instructed.
- Place a **BOX** around

your final answer

 to each question.
- If you need more room, use the backs of the pages and indicate to the grader that you have done so.
- Raise your hand if you have a question.
- Read each question carefully, before and after answering it.

Good luck!

Problem	Total Points	Score
1	8	
2	8	
3	10	
4	12	
5	12	
Total	50	

1. [8 points] The speedometer readings on a car, in miles per hour, were observed at 1-minute intervals during an 8 minute trip and recorded in the following chart.

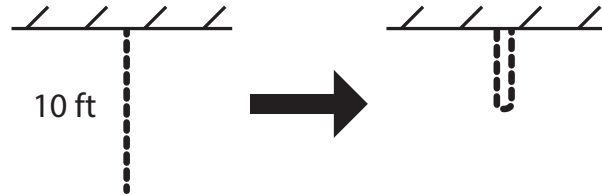
t (min)	v (mi/h)	t (min)	v (mi/h)
0	40	6	56
1	42	7	57
2	45	8	57
3	49		
4	52		
5	54		

Use Simpson's Rule **with** $n = 4$ **subintervals** to estimate the distance traveled by the car during this 8 minute trip. Show your work and include units in your final answer.
(*speaking of units, recall that there are 60 minutes in an hour*)

2. [8 points] Consider the improper integral: $\int_1^e \frac{1}{x(\ln(x))^2} dx$. If it converges, evaluate it. If it diverges, say so and show why.

Show your work, and include the limits you compute.

3. [10 points] A 10-ft chain weighs 25 lbs and hangs from a ceiling. Find the work done in lifting the lower end of the chain to the ceiling so that it's level with the upper end. Show your work and how you set up any integrals you compute.



4. Compute the following definite integrals. Simplify, but leave your answers in exact form.

(a) [6 points] $\int_0^{\pi/3} \tan^4(\theta) d\theta$

(b) [6 points] $\int_0^{1/2} \arcsin(x) dx$

5. Evaluate the following indefinite integrals.

(a) [6 points] $\int \sqrt{49 - x^2} dx$

(b) [6 points] $\int \frac{4}{x^3 - x^2} dx$