

MATH 217`
First Midterm Exam
Prof. Jesenko Vukadinović

Name: _____
Student ID: _____

P1	
P2	
P3	
P4	
P5	
TOTAL	

NOTICE: This Material May Be Protected By
Copyright Law (Title 17, U.S. Code)

Read each question carefully and try to understand it before answering the questions. You may use the back of the pages if you need extra space. **Show all the computations to get full credit. Write clearly. Good luck!!**

1. Evaluate the indefinite integral

$$\int (x + 2) \sin(x^2 + 2x + \pi) dx.$$

2. Evaluate the definite integral

$$\int_1^{\pi} \left(\frac{2x^2 + x}{\sqrt{x}} - \sin x \right) dx.$$

3. Evaluate the integral

$$\int_2^4 (x^2 + x) dx$$

following these steps:

- (a) Partition the interval $[2, 4]$ into n subintervals of the same length Δx .
- (b) find the area of the circumscribed polygon corresponding to this partition.
- (c) let n approach infinity.

4. If a particle moving on the x-axis has acceleration $a(t) = 12t^2 + 2$ at time t and if its initial velocity is $v_0 = 2$ and its initial position is $x_0 = 3$, find its position and velocity at $t = 2$. Assume that x is measured in feet and t in seconds.

5. Sketch the region bounded by the graphs of $x = y^2$ and $y = x$, show a typical slice, approximate its area, set up an integral, and calculate the area of the region.