

Practice Midterm 3 Math 241 Spring 2019

Name:

Read all of the following information before starting the exam:

- **CALCULATORS ARE NOT ALLOWED.**
- Show all work, clearly and in order using proper notations, if you want to get full credit. We reserve the right to take off points if we cannot see how you arrived at your answer (even if your final answer is correct).

1. Use mid-points to approximate the area above the x -axis and under $x^2 + 6$ from $x = 0$ to $x = 6$ using 3 rectangles.

2. Use the definition of area to find the area under $y = x^2$ from $x = 1$ to $x = 3$.

3. Find the following integrals

(a) $\int_0^4 2(\sqrt{t} - t)dt$

(b) $\int \frac{1+2x^3}{x^3} dx$

(c) $\int \tan^4 \theta \cdot \sec^2 \theta d\theta$

(d) $\int_0^\pi 2 \sin x \cos^2 x dx$

(e) $\int \frac{x}{(x^2+2)^3} dx$

4. Find the area between the curves $y = 2x^2$ and $y = 6x$ from $x = -2$ to $x = 5$.

5. Find the volume of the solid obtained by rotating the region bounded by $y = x^3$, $x = y$, $x \geq 0$ about the line $y = -1$