

Your name: _____

Rec. Instr.: _____

Rec. Time: _____

Show all your work in the space provided under each question. Please write neatly and present your answers in an organized way. You may use your one sheet of notes, but no books or calculators. This exam is worth 60 points. The chart below indicates how many points each problem is worth.

Problem	1	2	3	4
Points	/10	/10	/10	/10
Problem	5	6		Total
Points	/10	/10		/60

1. Evaluate the limit.

$$\lim_{x \rightarrow \infty} \left(\frac{x-1}{x} \right)^x$$

2. Evaluate the definite integral.

$$\int_0^{\frac{\pi}{3}} \sec^4(\theta) \tan^3(\theta) \, d\theta$$

3. Evaluate the integral.

$$\int \frac{7x - 6}{x^3 - 2x^2} dx$$

4. Evaluate the improper integral.

$$\int_0^{\infty} x^2 e^{-x} \, dx$$

5. Evaluate the integral.

$$\int 6x^2 \tan^{-1}(x) \, dx$$

6. Evaluate the integral.

$$\int \frac{\sqrt{4-x^2}}{x^2} dx$$