

Written Work 4 (Exam 1 Study Guide)

Due: Saturday, February 11, 2021

Directions: Work neatly. Make sure your answers are clearly visible. Show all your steps. Box your answers. Make sure you use proper integral and limit notation. Make sure you state if you use L'Hopital's Rule

1. Given $\int_2^5 xe^{-x} dx$.

(a) Approximate the integral using MID(4). Round your answer to 4 decimal places.

(b) Determine if the approximation in part a is an overestimate, underestimate, or cannot tell? Explain your reasoning. (NOTE: Evaluating the integral will receive 0 credit for this part. You do not need to evaluate the integral to answer this part of the question.)

2. Use the following table of values to approximate $\int_5^7 g(w)dw$ for TRAP(4). Leave your answer as a decimal.

w	4	4.6	5	5.2	5.5	5.8	6	6.5	6.9	7	7.1
g(w)	9	3	7	2.5	5	10.8	6.3	1.4	3	4.6	4.1

3. Use integration by parts to evaluate the following integral. In one column show your math in the other summarize in words what you did.

$$\int x(\ln x)^2 dx$$

(Put math here)

(Put prose here)

4. Use trigonometric substitution to evaluate the following integral. In one column show your math in the other summarize in words what you did.

$$\int \frac{\sqrt{25 - 9x^2}}{x} dx$$

(Put math here)

(Put prose here)

5. Use partial fraction decomposition to evaluate the following integral. In one column show your math in the other summarize in words what you did.

$$\int \frac{2x^2 - 3x + 33}{x^3 + x^2 + 16x + 16} dx$$

(Put math here)

(Put prose here)