

1. Use the MRAM method to approximate the area of the region enclosed between the graph of f and the x axis for $[0, 2]$. $f(x) = -x^2 + 6$ Use 4 intervals. (Show all calculations and a diagram)

1. _____

2. Use a diagram and area formulas to evaluate the following integrals.

(Do not use the Fundamental Theorem of Calculus) (Exact answer)

a) $\int_0^{10} \sqrt{10x - x^2} dx$ (Hint: Complete the square)

a) _____

b) $\int_2^6 (2x + 4) dx$

b) _____

3. Evaluate each integral. Use the Fundamental Theorem of Calculus where applicable.

a) $\int_{-1}^1 (t^3 - 3) dt$

a) _____

b) $\frac{d}{dx} \int_3^x (2t^2 + 5)^2 dt$

b) _____

4. Graph the function over the interval. Then a) integrate the function over the interval and b) find the area of the region between the graph and the x -axis. $y = x^2 - 4x$, $[0, 5]$

a) _____

b) _____

5. Find the average value of the function on the interval. At what point(s) in the interval does the function assume its average value? $y = (x - 1)^2$, $[0, 3]$

5. _____

6. Find the total area of the region between the curve and the x-axis.

$$y = 3x^2 - 3, \quad [-2, 2]$$

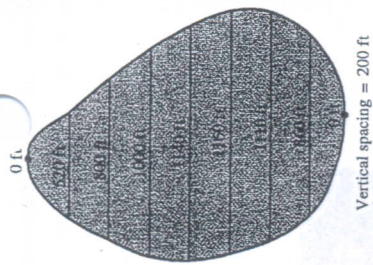
6. _____

7. Use the Trapezoidal Rule with $n = 4$ to approximate the value of the integral.

$$\int_1^2 \frac{1}{x} dx$$

7. _____

8. Use the trapezoidal rule to estimate the surface area of the pond.



8. _____

9. Use Simpson's Rule to estimate the area of the above pond.

9. _____