

MTH 1126 - Test #2

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Name _____

Instructions. Show CLEARLY how you arrive at your answers.

1. Compute the arclength of the graph of the function $f(x) = \frac{8}{3}x^{\frac{3}{2}} + 4$ from the point $(0, 4)$ to the point $(3, f(3))$.

2. Use the “ $f - g$ ” method to compute the area bounded by the graphs of $f(x) = 1 - x^2$ and $g(x) = -x + 1$.

3. Find the area bounded by the graphs of $f(x) = 4x - x^2$ and $g(x) = x$. (Partition the appropriate interval, sketch the i^{th} rectangle, build the Riemann Sum, derive the appropriate integral.)

4. Six pounds of force is required to stretch a spring 3 inches past the point of equilibrium. How much work is done stretching the free end of the spring from 3 inches past equilibrium to 12 inches past the point of equilibrium? (Partition the appropriate interval, compute F_i , build the Riemann Sum, derive the appropriate integral.)

5. Use the “disc method” to compute the volume of the solid of revolution generated by revolving the region bounded by the graphs of $f(x) = x^{\frac{1}{2}}$, $x = 1$, $x = 4$, and the x -axis, about the x -axis. (For your information: the equation of the x -axis is $y = 0$.)

Use the “five step method” (partition the interval, sketch the i^{th} rectangle, form the sum, take the limit)

6. Use the “shell method” to compute the volume of the solid of revolution generated by revolving the region described below about the y -axis.

The region lies to the right of the y -axis and is bounded by the graph $f(x) = x^2 + 3$, the y -axis, and the graph $g(x) = 4x^2$.

Use the “five step method” (partition the interval, sketch the i^{th} rectangle, form the sum, take the limit)