

MTH 1126 - Test #2

SPRING 2019

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Name _____

Instructions. Show CLEARLY how you arrive at your answers.

1. Compute the arclength of the graph of the function $f(x) = x^4 + \frac{1}{32}x^{-2}$ from the point $(1, \frac{33}{32})$ to the point $(2, \frac{2049}{128})$.

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

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

4. Use the “shell 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 y -axis. (For your information: the equation of the y -axis is $x = 0$.)

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

5. Use the “disc method” to compute the volume of the solid of revolution generated by revolving the region described below about the x -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, the x -axis, and the line $x = 2$.

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