MTH 1126 - Test #2 (11am Class)

Spring 2025

Pat Rossi Name _____

Instructions. Show CLEARLY how you arrive at your answers.

1. Use the "$f - g$" method to compute the area bounded by the graphs of $f(x) = 4x$ and $g(x) = x^2$.

2. Find the area bounded by the graphs of $f(x) = x^2 - 4$ and $g(x) = 2x - 1$. (Partition the appropriate interval, sketch the i^{th} rectangle, build the Riemann Sum, derive the appropriate integral.)

3. Use the "shell method" to compute the volume of the solid of revolution generated by revolving the region bounded by the graph $f(x) = x^3 + 1$, the y-axis, and the line $y = 9$, 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)

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4. Use the "disc method" to compute the volume of the solid of revolution generated by revolving the region bounded by the graph $f(x) = 1 - x^2$ and the x-axis about the line $y = -1$.

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

5. $\int_0^5 f(x)\,dx = 10$ and $\int_5^3 2f(x)\,dx = 6$. Compute $\int_0^3 f(x)\,dx$.