

8.11 Washer Method: Revolve Around the x - or y -axis

Calculus

Name: _____

CA #1

For each problem, sketch the area bounded by the equations and revolve it around the axis indicated. Find the volume of the solid formed by this revolution. A calculator is allowed, so round to three decimal places.

1. $y = x^2 + 4$, $x = -1$, $x = 1$, and $y = 3$. Revolve around the x -axis.

2. $y = \frac{2}{x}$, $x = 4$, and $y = 3$. Revolve around the y -axis.

3. $y = x^2$ and $y = 2x$. Revolve around the x -axis.

4. Same region as #3, but revolve around the y -axis.

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| 3. $V = \pi \int_2^0 (4x^2 - x^4) dx \approx 13.404$ | 4. $V = \pi \int_{\frac{1}{4}}^0 \left(y - \frac{1}{4}y^2 \right) dy \approx 8.3775$ |
| 1. $V = \pi \int_1^{-1} [(x^2 + 4)^2 - 9] dx \approx 61.994$ | 2. $V = \pi \int_2^{\frac{1}{4}} \left(16 - \frac{y^4}{4} \right) dy \approx 104.72$ |