

8.12 Washer Method: Revolve Around Other Axes

Calculus

Name: _____

CA #1

A region S is bounded by the graphs of $y = x - 1$, $x = 0$, and $y = 3$.

1. Sketch the graph and find the area of region S .

2. Let S be the base of a solid with cross sections perpendicular to the x -axis that form a square. Find the volume of this solid. [Use a calculator after you set up the integral.]

3. Let S be the base of a solid with cross sections perpendicular to the y -axis that form a semi-circle. Find the volume of this solid. [Use a calculator after you set up the integral.]

Write the equation for the “big radius” and the “little radius” for the solid of revolution when revolving S around the given line. Then setup the integral to find the volume of the solid formed. **DO NOT EVALUATE.**

4. The line $y = -1$.

$R =$

$r =$

$V =$

5. The line $y = 5$.

$R =$

$r =$

$V =$

6. The line $x = -1$.

$R =$

$r =$

$V =$

$4. V = \pi \int_4^6 (16 - x^2) dx$	$5. V = \pi \int_4^6 (x - 1 - 5)^2 dx$	$6. V = \pi \int_3^6 (y + 2)^2 dy$
$1. A = \int_4^6 (x - 1) dx = 8$	$2. V = \int_4^6 \frac{1}{2} (3 - (x - 1))^2 dx = 21.333$	$3. V = \int_3^6 \frac{1}{2} \left(\frac{z}{x+1} \right)^2 dx = 8.3775$