8.12 Washer Method: Revolve Around Other Axes

CA #2

Calculus Name: ______________________________

A region S is bounded by the graphs of $y = x^2$ and $y = 2x$.

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 semicircle. 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 isosceles right triangles. 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 $y = 4$.

$R =$

$r =$

$V =$

5. The line $x = 2$.

$R =$

$r =$

$V =$

6. The line $x = -1$.

$R =$

$r =$

$V =$

Answers to 8.12 CA #2

1. $A = \int_0^2 (2x - x^2)\,dx = 1.333$	2. $V = \frac{\pi}{2}\int_0^2 \left(\frac{2x - x^2}{2}\right)^2 dx = 0.41887$
3. $V = \int_0^4 \frac{1}{2}\left(\sqrt{y} - \frac{y}{2}\right)^2 dy = 0.2666$	4. $V = \pi\int_0^2 [(4 - x^2)^2 - (4 - 2x)^2]\,dx$
5. $V = \pi\int_0^4 \left[\left(2 - \frac{1}{2}y\right)^2 - \left(2 - \sqrt{y}\right)^2\right] dy$	6. $V = \pi\int_0^4 \left[\left(\sqrt{y} + 1\right)^2 - \left(\frac{1}{2}y + 1\right)^2\right] dy$