Notes 6.3 **Name** _____

Volumes by Disks (6.3)

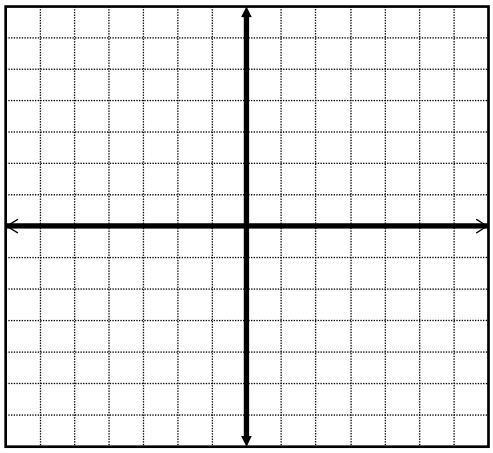
$$V = \int_a^b \pi \left[\left(\text{outer radius} \right)^2 - \left(\text{inner radius} \right)^2 \right] dx, \qquad a \le x \le b$$

or

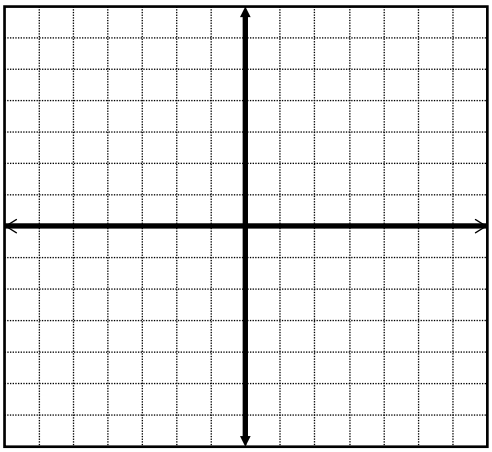
$$V = \int_c^d \pi \left[\left(\text{outer radius} \right)^2 - \left(\text{inner radius} \right)^2 \right] dy, \qquad c \le y \le d$$

Finding Volumes Using Disks and Washers: *Find the volume using the rotation.*

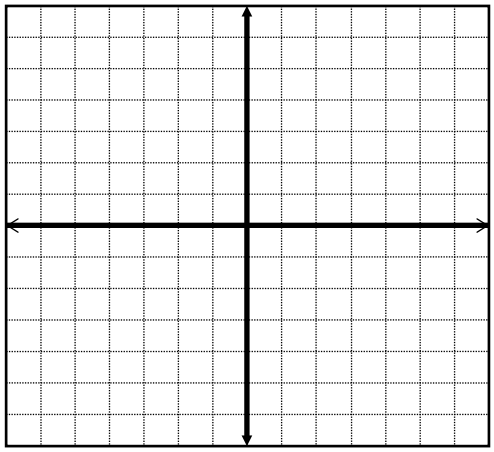
1) Find the volume of the solid region obtained by rotating the region bounded by $y = x^2 - 4x + 5,\ x = 1,\ x = 4$ and the *x*-axis about the *x*-axis.



2) Find the volume of the solid region obtained by rotating the region bounded by $y = \sqrt[3]{x}$ and $y = \frac{x}{4}$ that lies in the first quadrant about the *y*-axis.



3) Find the volume of the solid region obtained by rotating the region bounded by $y = x^2 - 2x$ and $y = x$ about the line $y = 4$.



4) Find the volume of the solid region obtained by rotating the region bounded by $y = 2\sqrt{x-1}$ and $y = x - 1$ about the line $x = -1$.