

Volume – Solids of Revolution WS 1  
AP Calculus AB

1. Find the volume of the solid that results when the region bounded by  $y = \sqrt{9 - x^2}$  and the  $x$ -axis is revolved around the  $x$ -axis.
2. Find the volume of the solid that results when the region bounded by  $y = \sec x$  and the  $x$ -axis from  $x = -\frac{\pi}{4}$  to  $x = \frac{\pi}{4}$  is revolved around the  $x$ -axis.
3. Find the volume of the solid whose base is the region between the semi-circle  $y = \sqrt{16 - x^2}$  and the  $x$ -axis, and whose cross-sections perpendicular to the  $x$ -axis are squares with a side on the base.
4. Find the volume of the solid that results when the region bounded by  $x = 1 - y^2$  and the  $y$ -axis is revolved around the  $y$ -axis.
5. Find the volume of the solid that results when the region bounded by  $y = x^3$ ,  $x = 2$ , and the  $x$ -axis is revolved around the line  $x = 2$ .
6. Find the volume of the solid whose base is the region between  $y = x^2$  and  $y = 4$  and whose perpendicular cross-sections are isosceles right triangles with the hypotenuse on the base.
7. Find the volume of the solid that results when the region bounded by  $y^2 = 8x$  and  $x = 2$  is revolved around the line  $x = 4$ . Set up but do **not** evaluate the integral.