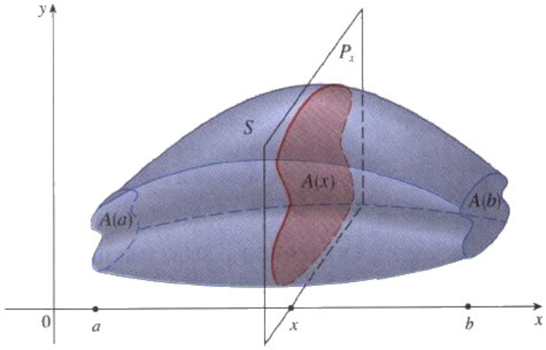
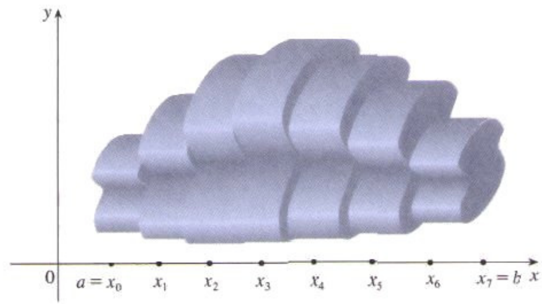
Section 6.2: Volume

Let S be a sold that lies between the planes P_a and P_b. Assume that cross sections of the solid is given by A and are perpendicular to the x-axis.

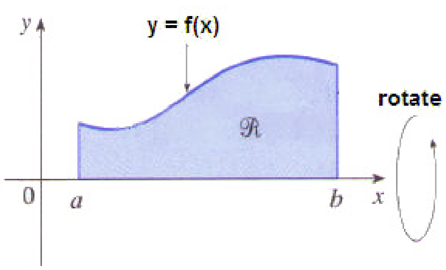


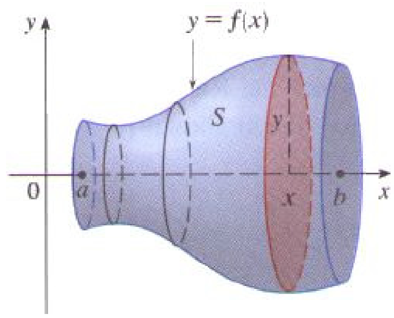


1. The solid, S, has a base that is a circular disk with radius 2. Find the volume of the the solid if parallel cross sections taken perpendicular to the base are squares.

2. The solid, S, has a base that is bounded by the equations: $y = x^2$ and $y = 4$. Find the volume of the solid if parallel cross sections are equilateral triangles that are perpendicular to the y-axis

Now lets consider rotating a region bounded between the x-axis and the function $f(x)$ from $x = a$ to $x = b$ around the x-axis.





3. Find the volume of the solid obtained by rotating the region bounded by the following around the x-axis.

   $y = x^2 + 1$
   x-axis
   $x = -1$
   $x = 2$

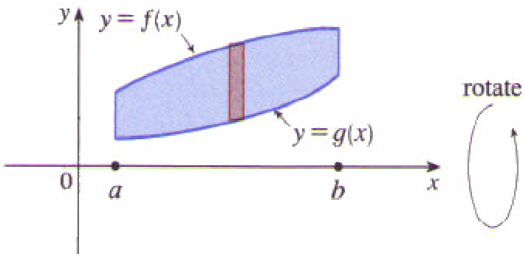
4. Find the volume of the solid obtained by rotating the region bounded by the given curves around the y-axis.

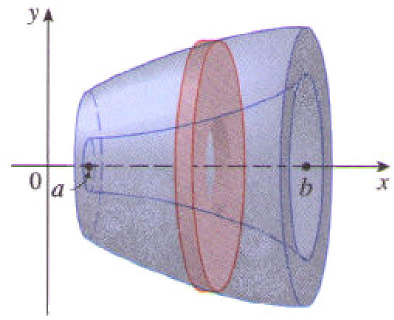
   $x = 4y - y^2$
   $x = 0$

5. Find the volume of the solid obtained by rotating the region bounded by the given curves around the y-axis.

   $y = x^2 + 1$
   $y = 0$
   $x = 0$
   $x = 2$

Now lets consider rotating a region bounded between the function $f(x)$ and $g(x)$ from $x = a$ to $x = b$ around the x-axis.





6. Set up the integral(s) that would give the volume of the solid obtained by rotating the region bounded by the given curves around x-axis.

   $y = x^2 + 2$
   $2y - x = 2$
   $x = 0$
   $x = 1$

7. Set up the integral(s) that would give the volume of the solid obtained by rotating the region bounded by the given curves around $y = 3$

$y = x^2 + 2$
$2y - x = 2$
$x = 0$
$x = 1$

8. Set up the integral(s) that would give the volume of the solid obtained by rotating the region bounded by the given curves around $x = -3$.

$y = x^3$
$y = 2x + 4$
$x = 0$