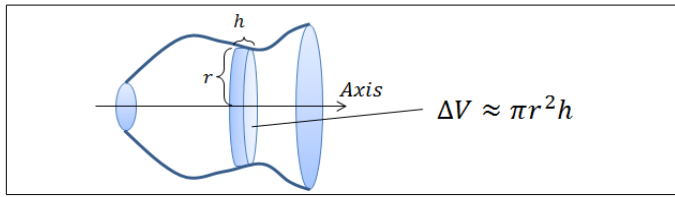


Problem Set 6.2

Solids of Revolution: Method of Disks

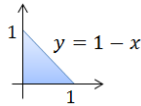


1. (1) Find the volume of the solid generated by revolving the region R bounded by $y = 1 - x$, x -axis, and y -axis about the x -axis.

Sol. $r = 1 - x$, $h = \Delta x$

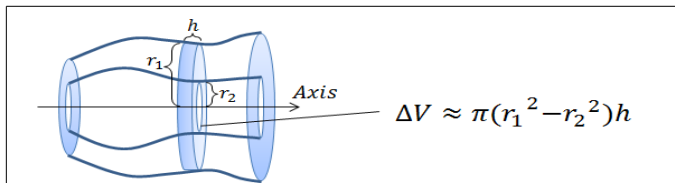
Then, $\Delta V \approx \pi(1 - x)^2 \Delta x$

Thus, $V = \int_0^1 \pi(1 - x)^2 dx =$



(2) Find the volume of the solid generated by revolving the region R about the y -axis.

Solids of Revolution: Method of Washers

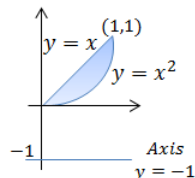


2. (1) Find the volume of the solid generated by revolving the region R bounded by $y = x$ and $y = x^2$ about the line $y = -1$.

Sol. $r_1 = x + 1$, $r_2 = x^2 + 1$, $h = \Delta x$

Then, $\Delta V =$

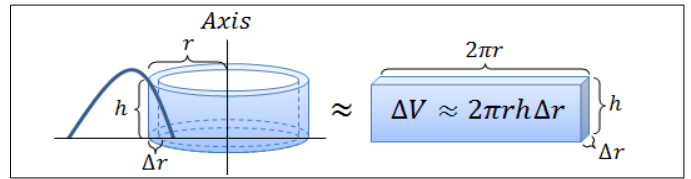
Thus, $V =$



(2) Find the volume of the solid generated by revolving the region R about the line $y = 1$.

Problem Set 6.3

Solid of Revolution: Method of Shells

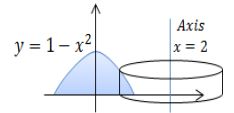


3. (1) Find the volume of the solid generated by revolving the region R bounded by $y = 1 - x^2$ and x -axis about the line $x = 2$.

Sol. $r = 2 - x$, $h = 1 - x^2$, $\Delta r = \Delta x$

Then, $\Delta V \approx 2\pi(2 - x)(1 - x^2)\Delta x$

Thus, $V = \int_{-1}^1 2\pi(2 - x)(1 - x^2)dx =$



(2) Find the volume of the solid generated by revolving the region R about the line $x = -1$.

4. (1) Sketch the region R bounded by $y = 2 + x - x^2$, x -axis, and y -axis in first quadrant.

(2) Find the volume of the solid generated by revolving the region R about the line $y = -1$ (hint : Method of Washers)

(3) Find the volume of the solid generated by revolving the region R about the line $x = 3$. (hint : Method of Shells)