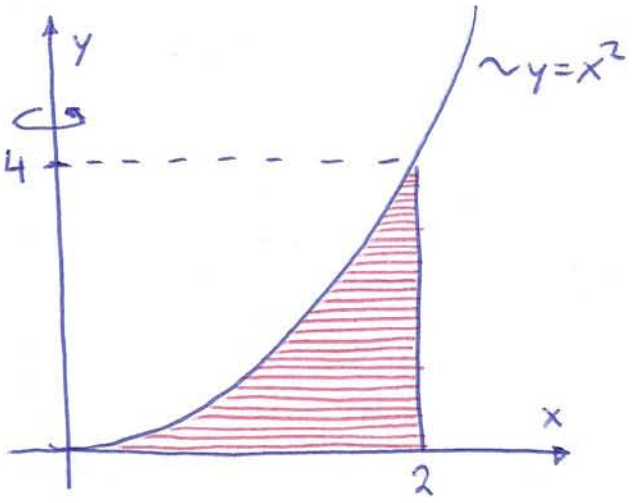
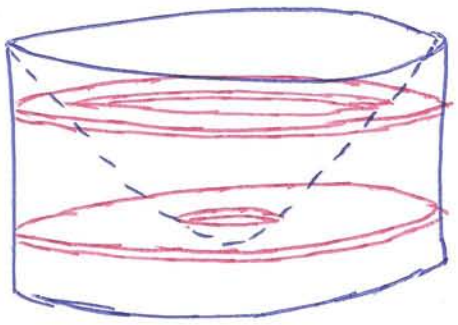
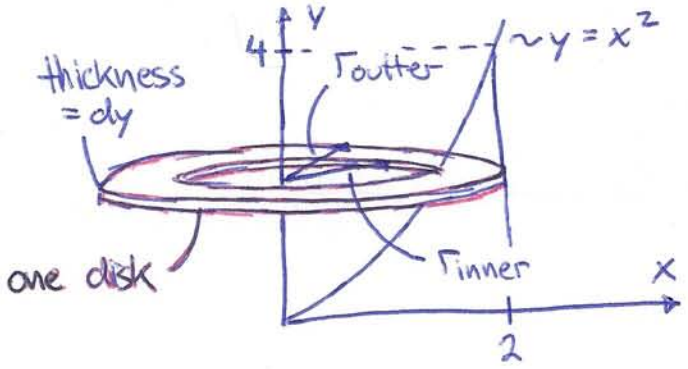
Volume Calculations



$\Rightarrow$



Method of Disks



$r_{outter} = 2$

$r_{inner} = x(y)$

$= \sqrt{y}$

Volume of disk

$= \left(\pi r_{outter}^2 - \pi r_{inner}^2\right)(dy)$

$= \left(\pi(2)^2 - \pi(\sqrt{y})^2\right)(dy)$

$$\text{Total Volume} = \int_0^4 \left(\pi(2)^2 - \pi(\sqrt{y})^2\right) dy$$

$$= \left[4\pi y - \frac{\pi}{2} y^2\right]_0^4$$

$$= \left[4\pi(4) - \frac{\pi}{2}(4)^2\right] - \left[4\pi(0) - \frac{\pi}{2}(0)^2\right]$$

$$= 16\pi - 8\pi = 8\pi$$