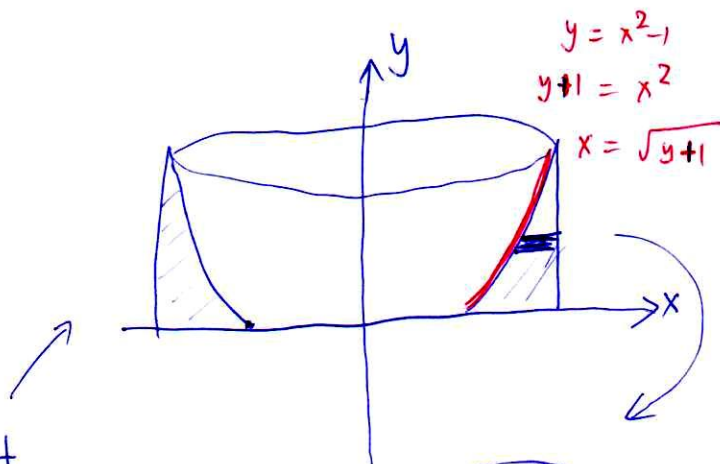
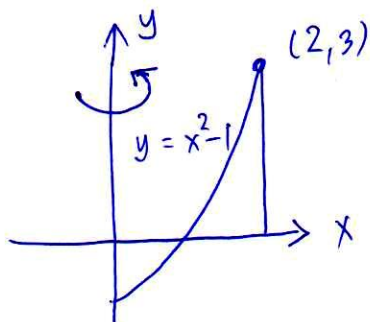


HW 6.1

Use the disk/washer method to find the volume of the solid of revolution below.



Solution After revolving, we get

$$\begin{aligned} \text{Volume of each slice} &= (\pi R^2 - \pi r^2) \Delta y \\ &= [\pi 2^2 - \pi (\sqrt{y+1})^2] \Delta y \\ &= [4\pi - \pi(y+1)] \Delta y = [3\pi - \pi y] \Delta y \end{aligned}$$

$$\begin{aligned} \text{So, total volume} &= \int_0^3 (3\pi - \pi y) dy \\ &= 9\pi - \frac{9}{2}\pi = \frac{9}{2}\pi. \end{aligned}$$