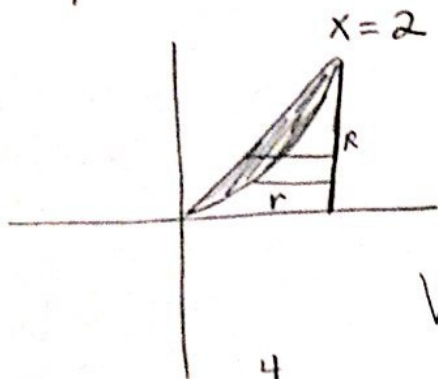


② pic! Same region around $x=2$



$$R = 2 - \frac{y}{2}$$

$$r = 2 - \sqrt{y}$$

$$V = \pi \int_0^4 (2 - \frac{y}{2})^2 - (2 - \sqrt{y})^2 dy$$

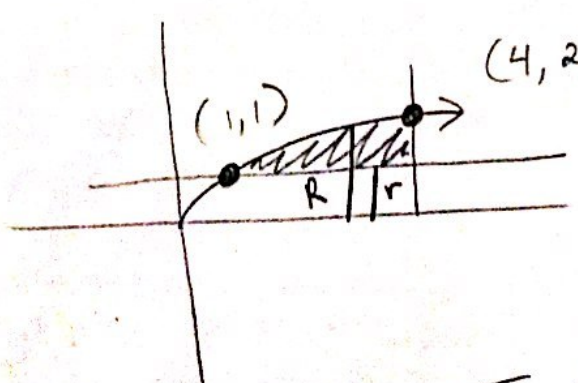
$$V = \pi \int_0^4 (4 - 2y + \frac{y^2}{4} - 4 + 4\sqrt{y} - y) dy$$

$$V = \pi \int_0^4 (-3y + \frac{1}{4}y^2 + 4y^{1/2}) dy$$

$$V = \pi \left(-\frac{3y^2}{2} + \frac{y^3}{12} + \frac{4 \cdot 2}{3} y^{3/2} \Big|_0^4 \right)$$

$$= \pi \left(-24 + \frac{16}{3} + \frac{64}{3} \right) = \frac{8\pi}{3}$$

③ $y = \sqrt{x}$, $y = 1$, $x = 4$ around x-axis



$$V = \pi \int_1^4 (\sqrt{x})^2 - (1)^2 dx$$

$$= \pi \int_1^4 (x - 1) dx$$

$$= \pi \left(\frac{x^2}{2} - x \Big|_1^4 \right)$$

$$= \pi \left[(8 - 4) - \left(\frac{1}{2} - 1 \right) \right] = \pi \left(4 - \left(-\frac{1}{2} \right) \right)$$

$$= \frac{9\pi}{2}$$