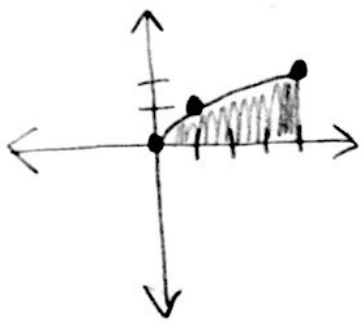


- ① Volume of the solid when  $y = \sqrt{x}$  is revolved around x-axis from  $0 \leq x \leq 4$

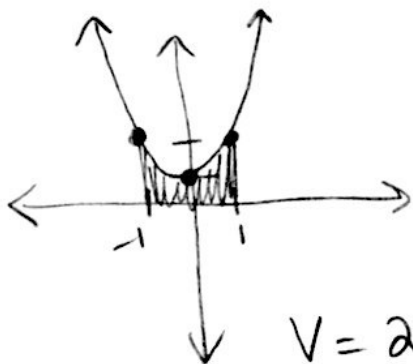


$$V = \pi \int_0^4 (\sqrt{x})^2 dx$$

$$V = \pi \int_0^4 x dx = \frac{\pi x^2}{2} \Big|_0^4$$

$$8\pi - 0 = \boxed{8\pi} \text{ units}^3$$

- ② Volume of solid generated when  $y = x^2 + 1$ ,  $x = -1$ , and  $x = 1$  revolved around x-axis



$$V = \pi \int_{-1}^1 (x^2 + 1)^2 dx \quad \text{OR}$$

$$V = 2\pi \int_0^1 (x^4 + 2x^2 + 1) dx$$

$$V = 2\pi \left( \frac{1}{5}x^5 + \frac{2}{3}x^3 + x \Big|_0^1 \right)$$

$$= 2\pi \left[ \left( \frac{1}{5} + \frac{2}{3} + 1 \right) - 0 \right] = 2\pi \left( \frac{3}{15} + \frac{10}{15} + \frac{15}{15} \right)$$

$$= 2\pi \cdot \frac{28}{15} = \boxed{\frac{56\pi}{15}} \text{ units}^3$$