

$$V = \int_a^b F(x) dx \cdot \pi$$

$$= \pi \cdot \int_0^2 (-x^3 + 2x^2)^2 dx$$

$$= \pi \cdot \int_0^2 (-x^3)^2 + 2 \cdot 2x^2 \cdot (-1) \cdot x^3 + (2x^2)^2 dx$$

$$= \pi \cdot \int_0^2 (x^6 - 4x^5 + 4x^4) dx$$

$$= \pi \cdot \int_0^2 \frac{1}{6}x^7 - 4 \cdot \frac{1}{6}x^6 + 4 \cdot \frac{1}{5}x^5$$

$$= \pi \cdot \int_0^2 \frac{1}{6}x^7 - \frac{2}{3}x^6 + \frac{4}{5}x^5$$

$$= \pi \cdot \left[\left(\frac{1}{6} \cdot 2^7 - \frac{2}{3} \cdot 2^6 + \frac{4}{5} \cdot 2^5 \right) - \left(\frac{1}{6} \cdot 0^7 - \frac{2}{3} \cdot 0^6 + \frac{4}{5} \cdot 0^5 \right) \right]$$

$$= \pi \cdot \left(\frac{64}{15} - 0 \right) = \pi \cdot \frac{64}{15} = \underline{\underline{13,404 \text{ VE}}}$$