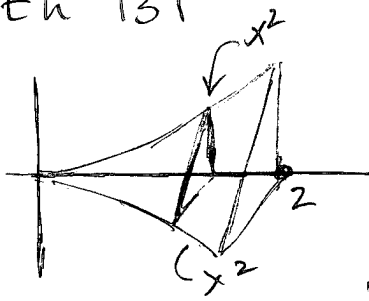


#1



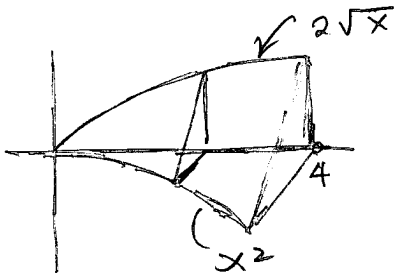
$A(x)$ = cross-sectional area

$$= \frac{1}{2} bh = \frac{1}{2} x^2 x^2 = \frac{1}{2} x^4$$

$$V = \int_0^2 A(x) dx = \frac{1}{2} \int_0^2 x^4 dx = \frac{1}{2} \cdot \frac{1}{5} x^5 \Big|_0^2$$

$$= \frac{1}{2} \left(\frac{1}{5} \cdot 32 - 0 \right) = \boxed{\frac{16}{5}}$$

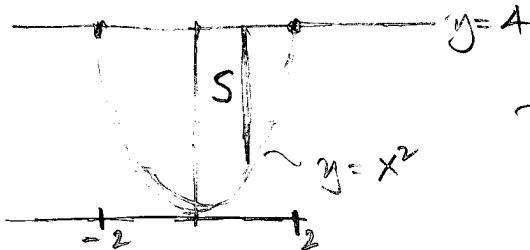
#2



$$A(x) = \frac{1}{2} bh = \frac{1}{2} x^2 \cdot 2\sqrt{x} = x^{5/2}$$

$$V = \int_0^4 x^{5/2} dx = \frac{2}{7} x^{7/2} \Big|_0^4 = \boxed{\frac{256}{7}}$$

#3



$$\leadsto A(x) = \begin{array}{c} \square \\ s \end{array} \text{ square}$$

$$s = 4 - x^2$$

$$s = 4 - x^2, \text{ so } A(x) = s^2 = (4 - x^2)^2 = 16 - 8x^2 + x^4$$

Intersections: $x^2 = 4 \Rightarrow x = \pm 2$

$$V(x) = \int_{-2}^2 16 - 8x^2 + x^4 dx = 2 \int_0^2 16 - 8x^2 + x^4 dx$$

even

$$= 2 \left[16x - \frac{8x^3}{3} + \frac{x^5}{5} \right]_0^2$$

$$= 2 \left[32 - \frac{64}{3} + \frac{32}{5} \right] = 2 \left[\frac{480 - 320 + 96}{15} \right]$$

$$= \boxed{\frac{512}{15}}$$