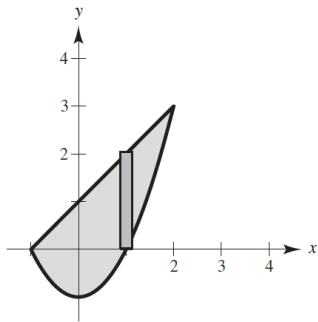


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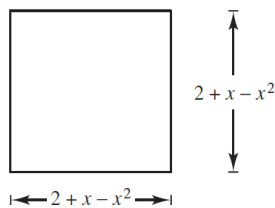
70.



$$\text{Base of cross section} = (x + 1) - (x^2 - 1) = 2 + x - x^2$$

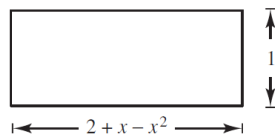
$$(a) \quad A(x) = b^2 = (2 + x - x^2)^2 = 4 + 4x - 3x^2 - 2x^3 + x^4$$

$$V = \int_{-1}^2 (4 + 4x - 3x^2 - 2x^3 + x^4) dx = \left[4x + 2x^2 - x^3 - \frac{1}{2}x^4 + \frac{1}{5}x^5 \right]_{-1}^2 = \frac{81}{10}$$

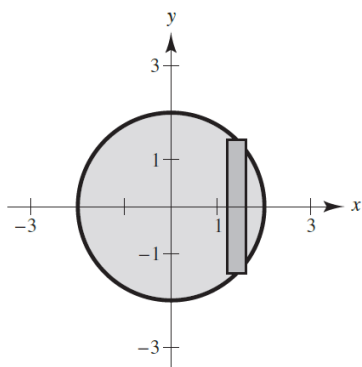


$$(b) \quad A(x) = bh = (2 + x - x^2) \cdot 1$$

$$V = \int_{-1}^2 (2 + x - x^2) dx = \left[2x + \frac{x^2}{2} - \frac{x^3}{3} \right]_{-1}^2 = \frac{9}{2}$$



71.



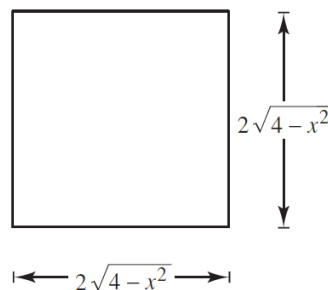
$$\text{Base of cross section} = 2\sqrt{4 - x^2}$$

$$(a) \quad A(x) = b^2 = (2\sqrt{4 - x^2})^2$$

$$V = \int_{-2}^2 4(4 - x^2) dx$$

$$= 4 \left[4x - \frac{x^3}{3} \right]_{-2}^2$$

$$= \frac{128}{3}$$

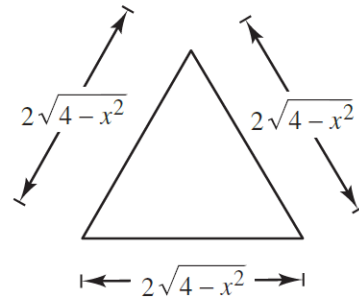


$$(b) A(x) = \frac{1}{2}bh = \frac{1}{2}(2\sqrt{4-x^2})(\sqrt{3}\sqrt{4-x^2}) = \sqrt{3}(4-x^2)$$

$$V = \sqrt{3} \int_{-2}^2 (4-x^2) dx$$

$$= \sqrt{3} \left[4x - \frac{x^3}{3} \right]_{-2}^2$$

$$= \frac{32\sqrt{3}}{3}$$

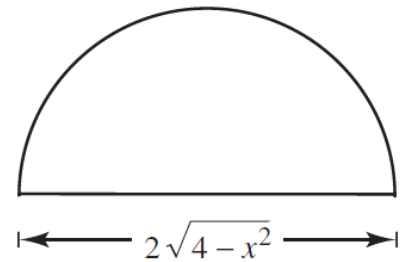


$$(c) A(x) = \frac{1}{2}\pi r^2 = \frac{\pi}{2}(\sqrt{4-x^2})^2 = \frac{\pi}{2}(4-x^2)$$

$$V = \frac{\pi}{2} \int_{-2}^2 (4-x^2) dx$$

$$= \frac{\pi}{2} \left[4x - \frac{x^3}{3} \right]_{-2}^2$$

$$= \frac{16\pi}{3}$$



$$(d) A(x) = \frac{1}{2}bh = \frac{1}{2}(2\sqrt{4-x^2})(\sqrt{4-x^2}) = 4-x^2$$

$$V = \int_{-2}^2 (4-x^2) dx$$

$$= \left[4x - \frac{x^3}{3} \right]_{-2}^2$$

$$= \frac{32}{3}$$

