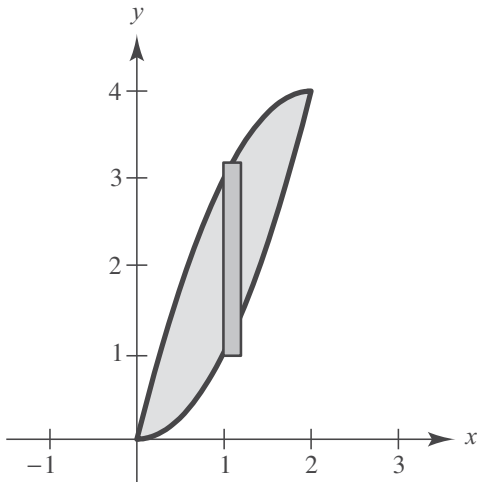


14. $y = x^2$, $y = 4x - x^2$ intersect at $(0, 0)$ and $(2, 4)$.

(a) $R(x) = 4x - x^2$, $r(x) = x^2$

$$\begin{aligned} V &= \pi \int_0^2 \left[(4x - x^2)^2 - x^4 \right] dx \\ &= \pi \int_0^2 (16x^2 - 8x^3) dx \\ &= \pi \left[\frac{16}{3}x^3 - 2x^4 \right]_0^2 = \frac{32\pi}{3} \end{aligned}$$



(b) $R(x) = 6 - x^2$, $r(x) = 6 - (4x - x^2)$

$$\begin{aligned} V &= \pi \int_0^2 \left[(6 - x^2)^2 - (6 - 4x + x^2)^2 \right] dx \\ &= 8\pi \int_0^2 (x^3 - 5x^2 + 6x) dx \\ &= 8\pi \left[\frac{x^4}{4} - \frac{5}{3}x^3 + 3x^2 \right]_0^2 = \frac{64\pi}{3} \end{aligned}$$

