

Solutions

Each answer shows the steps, then the **result**.

2.1

- $\pi \int_0^2 x^2 dx$

2.2

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

2.3

- $\pi \int_0^9 x dx = \pi \left[\frac{x^2}{2} \right]_0^9 = \frac{81\pi}{2}$

3.1 C

- the disc method integrates $\pi(\text{radius})^2$

3.2

(a)

- $\pi \int_0^2 (x^2)^2 dx = \pi \int_0^2 x^4 dx$

(b)

- $\pi \left[\frac{x^5}{5} \right]_0^2 = \frac{32\pi}{5}$

3.3

- radius = $x = y^2$; $V = \pi \int_0^2 (y^2)^2 dy = \pi \int_0^2 y^4 dy = \pi \left[\frac{y^5}{5} \right]_0^2 = \frac{32\pi}{5}$