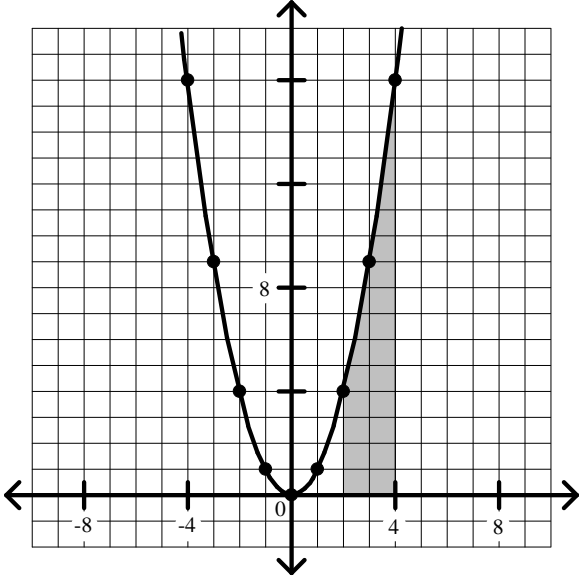


## Calculus Worksheet #7 Unit 3 Selected Solutions

1. the region bounded by the x-axis, the lines  $x = 2$  and  $x = 4$ , and the curve  $y = x^2$

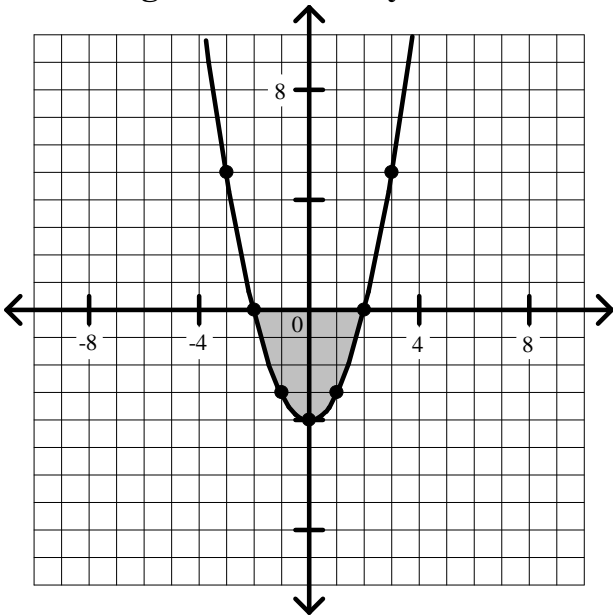


$$V = \pi \int_2^4 (x^2)^2 dx = \pi \int_2^4 (x^4) dx =$$

$$V = \pi \left( \frac{1}{5} x^5 \right) \Big|_2^4 = \pi \left( \frac{1024}{5} - \frac{32}{5} \right) =$$

$$V = \frac{992\pi}{5} \approx 623 \text{ cubic units}$$

4. the region bounded by the x-axis and the curve  $y = x^2 - 4$



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

$$V = \pi \left( \frac{1}{5} x^5 - \frac{8}{3} x^3 + 16x \right) \Big|_{-2}^2 =$$

$$V = \pi \left[ \left( \frac{32}{5} - \frac{64}{3} + 32 \right) - \left( -\frac{32}{5} + \frac{64}{3} - 32 \right) \right] =$$

$$V = \pi \left( \frac{256}{15} - \frac{-256}{15} \right) =$$

$$V = \frac{512\pi}{15} \approx 107 \text{ cubic units}$$