

43. The amount of water, A , after x hours, is given by the accumulation function

$$A(x) = \int_0^x 300\sqrt{t} \, dt$$

After 4 hours, there are $\int_0^4 300\sqrt{t} \, dt$ number of gallons.

$$\int_0^4 300\sqrt{t} \, dt = 300 \int_0^4 \sqrt{t} \, dt = 300 \cdot \frac{2}{3} \cdot t^{\frac{3}{2}} \Big|_0^4 = 200(4^{\frac{3}{2}} - 0) = 1600 \text{ gallons}$$

The correct choice is (D).

44. Solve $2 \sin x = x$ to obtain $x = 1.895$.

Then evaluate $V = \pi \int_0^{1.895} [(2 \sin x)^2 - x^2] \, dx = 6.678$ with a graphing calculator.

The correct choice is (D).