Answer on Question #84926 – Math – Calculus

Question

Find the volume of the solid of revolution formed when the arc of the parabola y^2= 4ax between x = 0 and x = a is resolved about the x – axis.

Solution

$$y = f(x)$$

$$y^2 = f^2(x) = 4ax$$

$$V = \pi \int_0^a f^2(x)dx = \pi \int_0^a 4adx = 2\pi ax^2|_0^a = 2\pi a(a^2 - 0) = 2\pi a^3$$

Answer: $2\pi a^3$.