

Pole powierzchni całkowitej walca wynosi  $400\pi$  cm kwadratowych. Stosunek długości promienia podstawy do wysokości wynosi 2:3. Oblicz objętość tego walca.

$$P_c = 400\pi \text{ cm}^2$$

$$\frac{r}{H} = \frac{2}{3} \quad | \cdot H$$

$$P_c = \pi r^2 + 2\pi rH$$

$$r = \frac{2}{3}H$$

$$400\pi = \pi r^2 + 2\pi rH \quad | : \pi$$

$$400 = r^2 + 2rH$$

$$400 = \left(\frac{2}{3}H\right)^2 + 2 \cdot \frac{2}{3}H \cdot H$$

$$400 = \frac{4}{9}H^2 + \frac{4}{3}H^2 \quad | \cdot 9$$

$$3600 = 4H^2 + 12H^2$$

$$3600 = 16H^2 \quad | : 16$$

$$225 = H^2$$

$$\text{to } \begin{cases} H = \sqrt{225} \\ H = 15 \end{cases}$$

$$r = \frac{2}{3}H$$

$$r = \frac{2}{3} \cdot 15$$

$$r = \frac{30}{3}$$

$$\underline{r = 10}$$

$$V = \pi r^2 \cdot H$$

$$V = \pi \cdot 10^2 \cdot 15$$

$$V = 100 \cdot 15\pi$$

$$\underline{V = 1500\pi}$$

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