

AI1110-Assignment 1

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1 QUESTION

The circumference of the base of a cylindrical vessel is 132 cm and its height is 25 cm. Find the

- 1) radius of the cylinder
- 2) volume of cylinder.(use $\pi = \frac{22}{7}$)

2 SOLUTION

Let r and h be the radius of the base and height of the cylindrical vessel, respectively. Let C_{base} be its base circumference and V be its volume.

We know that,

$$C_{base} = 2\pi r \quad (1)$$

$$V = \pi r^2 h \quad (2)$$

2.1 Radius of the cylinder

$$C_{base} = 2\pi r \quad (3)$$

$$132 = 2\pi r \quad (4)$$

$$132 = 2 \times \frac{22}{7} \times r \quad (5)$$

$$r = 21 \quad (6)$$

Thus the radius of base of the cylindrical vessel is 21cm.

2.2 Volume of the cylinder

$$V = \pi r^2 h \quad (7)$$

$$V = \frac{22}{7} \times 21^2 \times 25 \quad (8)$$

$$V = 34650 \quad (9)$$

Thus, the volume of the cylindrical vessel is 34650 cm^3 .

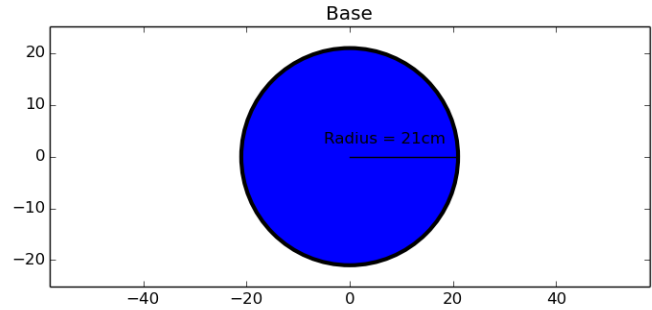


Fig. 2. Base of the cylindrical vessel with radius 21 cm

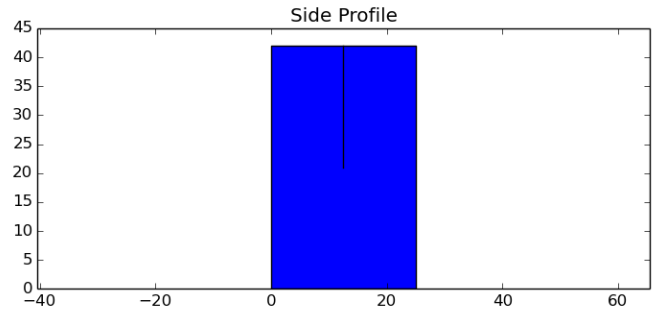


Fig. 2. Side view of the cylindrical vessel with height 25 cm

			Formula	Value Derived
Variables	Given	C_{base}	$2\pi r$	132 cm
		h	$\frac{V}{\pi r^2}$	25 cm
	Unknown	r	$\frac{C_{base}}{2\pi}$	21 cm
		V	$\pi r^2 h$	34650 cm^3

TABLE 1: Variables, Formulae and their Values Derived