

# AI1110-Assignment 1

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## 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  $\pi = \frac{22}{7}$ )

## 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,

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

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

### 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. 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  $34650 \text{ cm}^3$ .

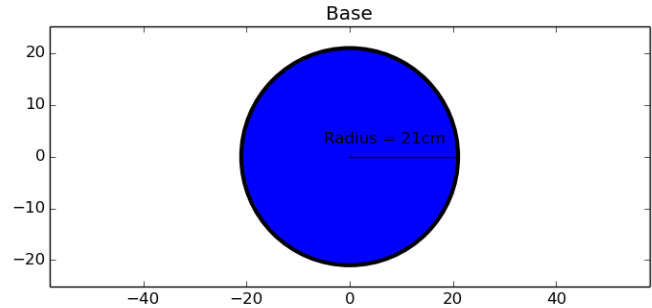


Fig. 2. Base of the cylindrical vessel with radius 21 cm

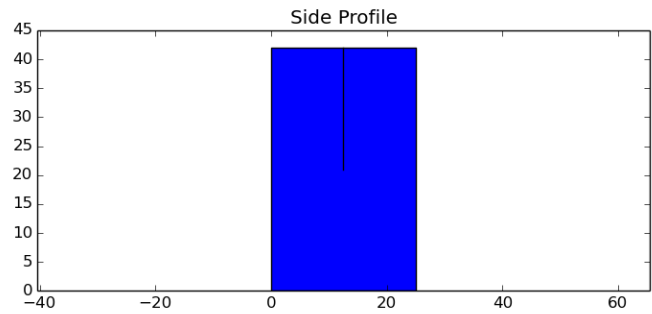


Fig. 2. Side view of the cylindrical vessel with height 25 cm

			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
		$V$	$\pi r^2 h$	$34650 \text{ cm}^3$

TABLE 1: Variables, Formulae and their Values Derived