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

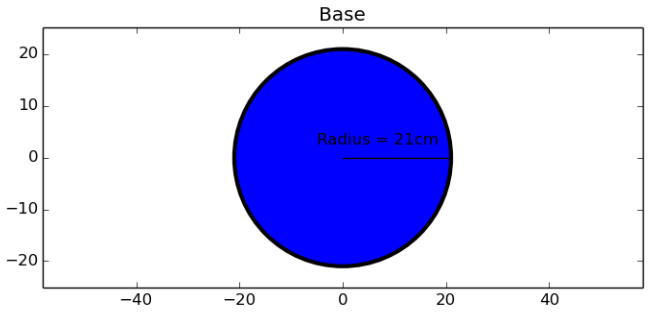
$$C_{base} = 2\pi r \quad ....(1)$$
$$132 = 2\pi r$$
$$132 = 2 \times \frac{22}{7} \times r$$
$$r = 21$$

Thus the radius of base of the cylindrical vessel is $21\,cm$.

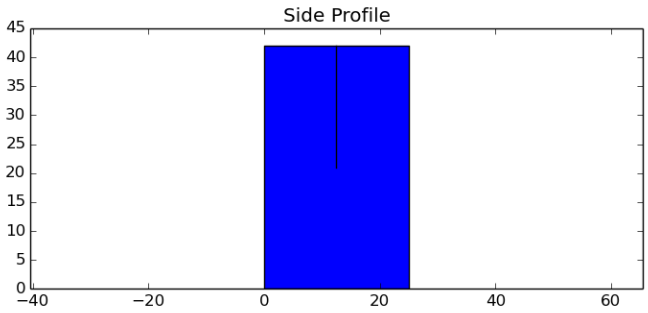
2. Volume of the cylinder

$$V = \pi r^2 h \quad ....(2)$$
$$V = \frac{22}{7} \times 21^2 \times 25$$
$$V = 34650$$

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



Base of the cylindrical vessel with radius 21 cm



Side view of the cylindrical vessel with height 25 cm

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

TABLE 1: h and C_{base} given; r and V found out