AI1110-Assignment 1

Vedant Bhandare
CS21BTECH11007

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,

$$C_{base} = 2\pi r \tag{1}$$
$$V = \pi r^2 h \tag{2}$$

2.1 *Radius of the cylinder*

$$C_{base} = 2\pi r \tag{3}$$
$$132 = 2\pi r \tag{4}$$
$$132 = 2 \times \frac{22}{7} \times r \tag{5}$$
$$r = 21 \tag{6}$$

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

2.2 *Volume of the cylinder*

$$V = \pi r^2 h \tag{7}$$
$$V = \frac{22}{7} \times 21^2 \times 25 \tag{8}$$
$$V = 34650 \tag{9}$$

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

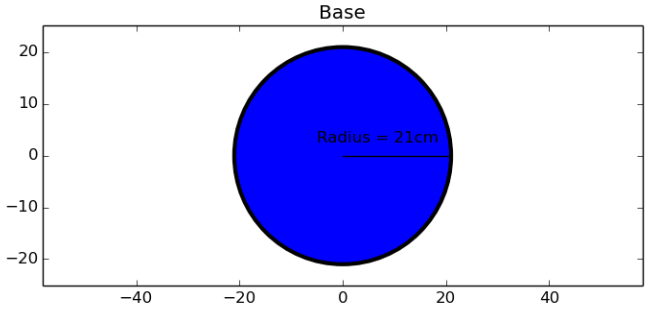

Fig. 2. Base of the cylindrical vessel with radius 21 cm

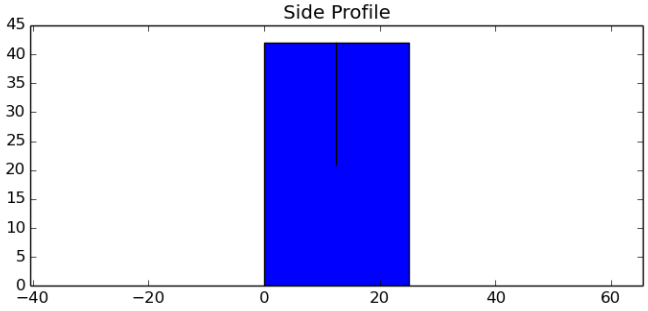

Fig. 2. Side view of the cylindrical vessel with height 25 cm

			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