

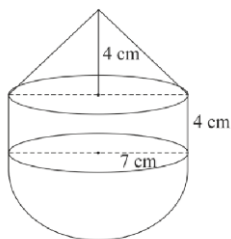
Assignment 1

Kotikalapudi Karthik CS21BTECH11030

29th March 2022

ICSE 2018 Question 9 (c)

- (c) The following figure represents a solid consisting of a right circular cylinder with a hemisphere at one end and a cone at the other. Their common radius is 7 cm. The height of the cylinder and cone are each of 4 cm. Find the volume of the solid.



Solution :

Here, radius of cone = radius of cylinder = radius of hemisphere = 7 cm

Height of cone = 4 cm

Height of cylinder = 4 cm

Volume of the figure = Vol. of cone + Vol. of cylinder + Vol. of hemisphere

(1)

$$\text{Volume of cone} = \frac{1}{3} \times \pi \times r^2 \times h = \frac{1}{3} \times \pi \times 49 \times 4 = \frac{196}{3} \times \pi \quad (2)$$

$$\text{Volume of cylinder} = \pi \times r^2 \times h = \pi \times 49 \times 4 = 196 \times \pi \quad (3)$$

$$\text{Volume of hemisphere} = \frac{2}{3} \times \pi \times r^3 = \frac{2}{3} \times \pi \times 49 \times 4 = \frac{392}{3} \times \pi \quad (4)$$

∴ From the above equations,

$$\text{Volume of the figure} = \frac{196}{3} \times \pi + 196 \times \pi + \frac{392}{3} \times \pi$$

$$\Rightarrow \text{Volume of the figure} = 490 \times \pi \approx 1539.38 \text{ cm}^3$$