Surface Area and volume of A Right Circular cylinder Ex 19.2 Q9

Answer :

Data given is as follows:

$h = 6r$

Total cost of painting=Rs.198

Painting rate= Rs.0.50 per square decimeter

We have to find the volume of the cylinder.

We know that,

Total Surface Area of the cylinder = $\pi rh + 2\pi r^2$

Also, it is given that,

Total cost of painting = 198

That is,

(Total Surface Area of the cylinder) × Painting rate = 198

$(\pi rh + 2\pi r^2) \times$ Painting rate $= 198$

$(\pi rh + 2\pi r^2) \times .50 = 198$

$\pi rh + 2\pi r^2 = 396$

In the above equation, let us replace h with $6r$.

$12\pi r^2 + 2\pi r^2 = 396$

$14\pi r^2 = 396$

$14 \times \frac{22}{7} \times r^2 = 396$

$r = 3$ decimeters

$h = 6r = 6 \times 3 = 18$ decimeters

Volume of the cylinder = $\pi r^2 h$

$= \frac{22}{7} \times 3 \times 3 \times 18$

Volume of the cylinder=509.14dm^3

Surface Area and volume of A Right Circular cylinder Ex 19.2 Q10

Answer :

Data given is as follows:

Ratio of radii of two cylinders = 2:3

Ratio of heights of two cylinders = 5:3

We have to find out the following:

(i) Ratio of the volumes of the two cylinders

(ii) Ratio of the Curved Surface Area of the two cylinders

Let r_1 and r_2 be the radii of the two cylinders respectively.

Let h_1 and h_2 be the heights of the two cylinders respectively.

Therefore we have,

$$\frac{r_1}{r_2}=\frac{2}{3}$$

$$\frac{h_1}{h_2}=\frac{5}{3}$$

(i) Since we have to find the ratio of the volumes of the two cylinders, we have

$$\frac{\text{Volume of cylinder1}}{\text{Volume of cylinder2}}=\frac{\pi r_1^2 h_1}{\pi r_2^2 h_2}$$

$$=\left(\frac{r_1}{r_2}\right)^2\left(\frac{h_1}{h_2}\right)$$

$$=\left(\frac{2}{3}\right)^2\left(\frac{5}{3}\right)$$

$$\boxed{\frac{\text{Volume of cylinder1}}{\text{Volume of cylinder2}}=\left(\frac{20}{27}\right)}$$

(ii) Since we have to find the ratio of the curved surface areas of the two cylinders, we have,

$$\frac{\text{Curved Surface Area of cylinder1}}{\text{Curved Surface Area of cylinder2}}=\frac{2\pi r_1 h_1}{2\pi r_2 h_2}$$

$$=\left(\frac{r_1}{r_2}\right)\left(\frac{h_1}{h_2}\right)$$

$$=\left(\frac{2}{3}\right)\left(\frac{5}{3}\right)$$

$$\boxed{\frac{\text{Curved Surface Area of cylinder1}}{\text{Curved Surface Area of cylinder2}}=\left(\frac{10}{9}\right)}$$

********** END **********