Surface Area and volume of A Right Circular cylinder Ex 19.1 Q7

Answer :

Data given in the problem is as follows:

$h = 7.5$ cm

$r = 3.5$ cm

We are supposed to find the ratio between the Total Surface Area and the Curved Surface Area.

We know that,

Total Surface Area (TSA) = $2\pi rh + 2\pi r^2$

Curved Surface Area (CSA) = $2\pi rh$

Therefore,

$$\frac{TSA}{CSA} = \frac{2\pi rh + 2\pi r^2}{2\pi rh}$$

$$\frac{TSA}{CSA} = \frac{2\pi r(h+r)}{2\pi rh}$$

$$\frac{TSA}{CSA} = \frac{(h+r)}{h}$$

Substituting the values of h and r in the above expression, we have

$$\frac{TSA}{CSA} = \frac{(7.5+3.5)}{7.5}$$

$$\frac{TSA}{CSA} = \frac{11}{7.5} = \frac{110}{75} = \frac{22}{15}$$

Hence the ratio between Total Surface area and Curved Surface Area is $\frac{22}{15}$

Surface Area and volume of A Right Circular cylinder Ex 19.1 Q8

Answer :

Data given in the problem is as follows:

Given cylinder is a hollow cylinder

External radius (R) = 8cm

Height (h) = 10cm

Total Surface Area = 338π

We have to obtain an equation in r, where r is the inner radius of the cylinder and using this equation we have to find the thickness of the cylinder.

We know that,

Total Surface Area of a hollow cylinder = $2\pi rh + 2\pi Rh + 2\pi R^2 - 2\pi r^2$

Therefore,

$2\pi rh + 2\pi Rh + 2\pi R^2 - 2\pi r^2 = 338\pi$

$2h(r+R) + 2(R^2 - r^2) = 338$

$h(r+R) + (R^2 - r^2) = 169$

$10(8+r) + (64 - r^2) = 169$

$80 + 10r + 64 - r^2 = 169$

$r^2 - 10r - 25 = 0$

$r^2 - 5r - 5r - 25 = 0$

$r(r-5) - 5(r-5) = 0$

$(r-5)(r-5) = 0$

$r = 5$

Thickness $= R - r = 8 - 5 = 3$ cm

Thickness of the cylinder is 3 cm

Surface Area and volume of A Right Circular cylinder Ex 19.1 Q9

Answer :

It is given that,

$r = 70$ cm

$h = 1.4$ m

Tin coating rate = Rs. $\dfrac{3.50}{1000}$ cm^2

We have to find the total cost of coating the cylinder with tin.

Let us first convert h from meters to centimeters.

$h = 1.4$ m

$= 140$ cm

Since the cylindrical vessel without lid has to be coated both on the inner side as well the outer side,

Area to be coated $= 2(2\pi rh + \pi r^2)$

$= 2\left(2 \times \dfrac{22}{7} \times 70 \times 140 + \dfrac{22}{7} \times 70 \times 70\right)$

$= 154000$ cm^2

Now let us find the total cost of coating this area.

For 1000 cm^2 the cost of coating is Rs.3.50

For 154000 cm^2 the cost of coating is given by $\dfrac{3.5 \times 154000}{1000} = 539$

Therefore the total cost of coating the vessel on both inner and outer sides is Rs.539

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