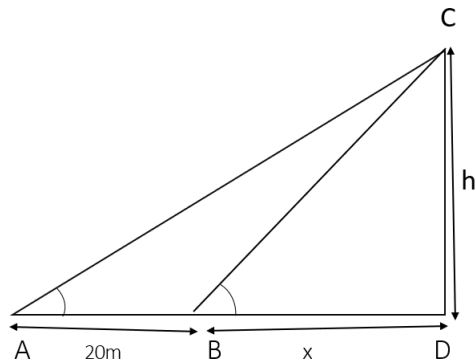


Assignment 1

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Q10(b) : A man observes the angle of elevation of the top of the tower to be 45° . He walks towards it in a horizontal line through its base. On covering 20 m the angle of elevation changes to 60° . Find the height of the tower correct to 2 significant figures.

Solution: Let the height of the tower be ' h ' and total distance between man and the tower be ' d '.



Given that, $\angle CAD = 45^\circ$ and $\angle CBD = 60^\circ$. Let the given angles be $\theta_1 = 45^\circ$ and $\theta_2 = 60^\circ$.

From the given information,

$$d = 20 + x \quad (1)$$

$$h \cot \theta_1 = d \quad (2)$$

$$h \cot \theta_2 = x \quad (3)$$

Solving the equations (1),(2),(3),we get

$$h \cot \theta_1 = 20 + h \cot \theta_2$$

$$h = \frac{20}{\cot \theta_1 - \cot \theta_2}$$

$$h = \frac{20}{\left(1 - \frac{1}{\sqrt{3}}\right)}$$

$$h = 47.32m$$

\therefore The height of the tower is 47.32 m