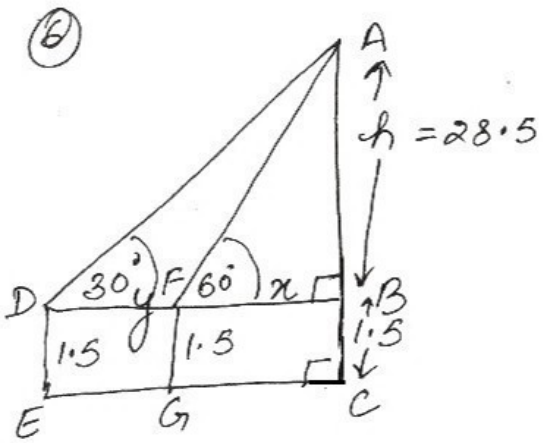
⑥



In rt △ FBA

$$\tan 60^\circ = \frac{AB}{FB}$$

$$\sqrt{3} = \frac{h}{x}$$

$$\Rightarrow h = \sqrt{3}x$$

$$\Rightarrow x = \frac{28.5}{\sqrt{3}} \quad \cdots (1)$$

In rt △ DBA

$$\tan 30^\circ = \frac{AB}{DB}$$

$$\frac{1}{\sqrt{3}} = \frac{h}{x+y}$$

$$\frac{1}{\sqrt{3}} = \frac{28.5}{x+y}$$

$$\Rightarrow x+y = 28.5\sqrt{3}$$

$$\frac{28.5}{\sqrt{3}} + y = 28.5\sqrt{3}$$

$$\Rightarrow y = 28.5\sqrt{3} - \frac{28.5}{\sqrt{3}}$$

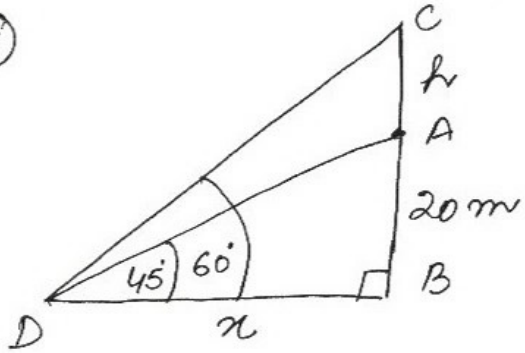
$$= \frac{28.5 \times 3 - 28.5}{\sqrt{3}}$$

$$= \frac{57}{\sqrt{3}} \quad 19\sqrt{3}$$

$$= 19\sqrt{3}$$

∴ distance travelled = $19\sqrt{3}$ m

⑦



let AB represents AB, AC represents AC

In rt △ ABC

$$\tan 45^\circ = \frac{AB}{BD}$$

$$1 = \frac{20}{x}$$

$$\Rightarrow x = 20$$

In rt △ CBD

$$\tan 60^\circ = \frac{BC}{BD}$$

$$\sqrt{3} = \frac{h+20}{20}$$

$$\Rightarrow h = 20\sqrt{3} - 20$$

$$= 20(\sqrt{3}-1)$$

∴ height of trans. tower = $20(\sqrt{3}-1)$ m