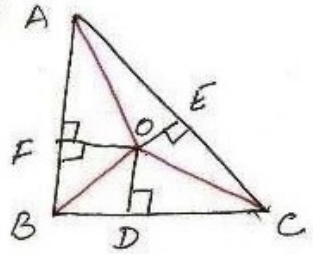
(8)



given - In fig
$OD \perp BC, OE \perp CA, OF \perp AB$

to prove

(i) $OA^2+OB^2+OC^2-OD^2-OE^2-OF^2 = AF^2+BD^2+CE^2$

(ii) $AF^2+BD^2+CE^2 = AE^2+CD^2+BF^2$

Const - join OA, OB, OC

Proof - In rt $\triangle OFA$

$AF^2 = OA^2 - OF^2$ (Py. th.) ... (i)

In rt $\triangle BDO$

$BD^2 = OB^2 - OD^2$ (Py th.) ... (ii)

In rt $\triangle OEC$

$CE^2 = OC^2 - OE^2$ (Py. th.) ... (iii)

(i) + (ii) + (iii)

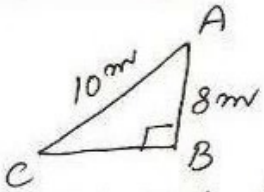
$OA^2+OB^2+OC^2-OD^2-OE^2-OF^2 = AF^2+BD^2+CE^2$

$\Rightarrow OA^2-OE^2+OB^2-OF^2+OC^2-OD^2 = AF^2+BD^2+CE^2$

$\Rightarrow AE^2+BF^2+CD^2 = AF^2+BD^2+CE^2$

[Using Pythagoras theorem in Δ AEO, Δ BFO and Δ CDO]

(9)



let AC rep. ladder, AB wall.

To find BC

Sol. In rt $\triangle CBA$

$AC^2 = AB^2+BC^2$ (Py. th.)

$10^2 = 8^2 + BC^2$

$\Rightarrow BC^2 = 100 - 64$

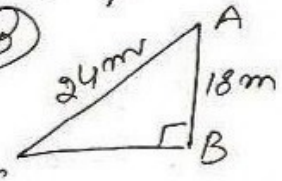
$= 36$

$BC = \sqrt{36}$

$= 6$

$\therefore$ regd. distance = 6 m

(10)



let AC rep. wire AB rep. pole

To find BC

Solution - In rt $\triangle CBA$

$BC^2 = AC^2 - AB^2$ (Py. th.)

$= 24^2 - 18^2$

$= (24-18)(24+18)$

$= 6 \times 42$

$\Rightarrow BC = \sqrt{6 \times 42}$

$= \sqrt{6 \times 6 \times 7}$

$= 6\sqrt{7}$ m

$= 6 \times 2.645$

$= 15.87$ m