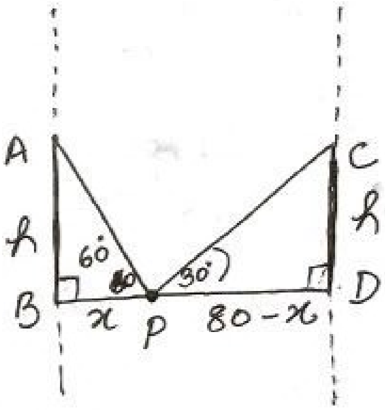
ex 9.1

(10)



let AB, CD represent poles, P is point of observ.

In rt $\triangle ABP$

$\tan 60° = \frac{h}{x}$

$\sqrt{3}x = h \cdots (1)$

In rt $\triangle CDP$

$\tan 30° = \frac{h}{80-x}$

$\frac{1}{\sqrt{3}} = \frac{h}{80-x}$

$\Rightarrow 80-x = h\sqrt{3}$

using (i)

$80-x = \sqrt{3}x \times \sqrt{3}$

$\Rightarrow 4x = 80$

$\Rightarrow x = 20$

Sub. in (1)

$h = \sqrt{3} \times 20$

$= 20\sqrt{3}$

$\therefore$ height of poles $= 20\sqrt{3}$

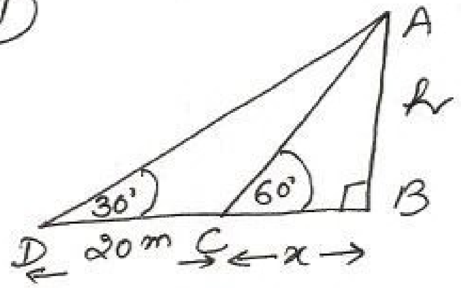
$= 20 \times 1.73$

$= 34.6$ m

distance of poles from point of observation

20 m, 60 m

(11)



In rt $\triangle CBA$

$\tan 60° = \frac{AB}{BC}$

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

$\Rightarrow h = \sqrt{3}x \cdots (1)$

In rt $\triangle DBA$

$\tan 30° = \frac{AB}{DB}$

$\frac{1}{\sqrt{3}} = \frac{h}{20+x}$

$\Rightarrow h\sqrt{3} = 20+x$

using (i)

$\sqrt{3}x \times \sqrt{3} = 20+x$

$\Rightarrow 3x - x = 20$

$\Rightarrow 2x = 20$

$\Rightarrow x = \frac{20}{2}$

$\Rightarrow x = 10$

Sub (1)

$h = 10\sqrt{3}$

$\therefore$ height of tower $= 10\sqrt{3}$

$= 10 \times 1.73$

$= 17.3$ m

width of canal $= x$

$= 10$ m