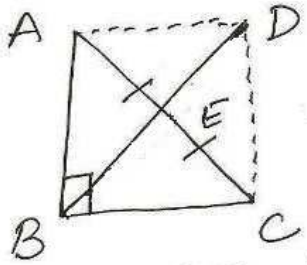
 ex 7.4 IX exemplar

(14)



to prove $BE = \frac{1}{2}AC$

const - produce BE to D s.t. ED = BE join AD, CD

proof $ED = EB$

$EA = EC$

$\therefore$ □ ABCD is a llgm

$\angle ABC = 90$

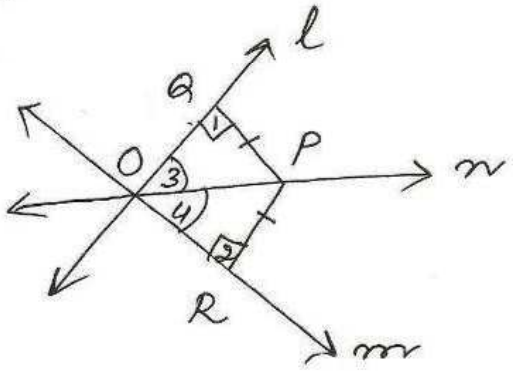
$\therefore$ llgm ABCD is a rect.

$AC = BD$ [diagonals of rect.]

$\frac{1}{2}AC = \frac{1}{2}BD$

$\frac{1}{2}AC = BE$ [$BE = ED$]

(15)



To prove – m is bisector of $\angle QOR$

Proof In $\triangle OQP$ and ORP

$\angle 1 = \angle 2 = 90^\circ$

$OP = OP$

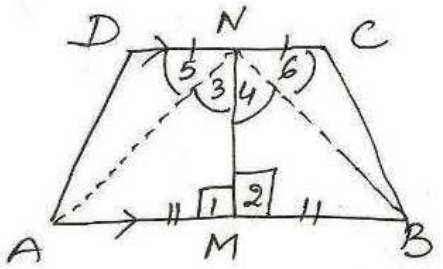
$PQ = PR$ (given)

$\therefore \triangle OQP \cong \triangle ORP$ by RHS prop

$\Rightarrow \angle 3 = \angle 4$ (cpct)

$\therefore$ m is bisector of $\angle QOR$

(16)



to prove $AD = BC$

const - join AN, BN

proof - In $\triangle AMN$ and $\triangle BMN$

$AM = BM$ (given)

$\angle 1 = \angle 2 = 90^\circ$

$NM = NM$

$\therefore \triangle AMN \cong \triangle BMN$ by SAS prop

$\angle 3 = \angle 4$ (cpct)

$AN = BN$ (do)

$\angle DNM = \angle CNM = 90^\circ$

$\angle 3 + \angle 5 = \angle 4 + \angle 6$ [$\because \angle 3 = \angle 4$]

In $\triangle ADN$ and $\triangle BCN$

$DN = CN$

$\angle 5 = \angle 6$

$AN = BN$

$\therefore \triangle ADN \cong \triangle BCN$ by SASp

$AD = BC$ (cpct)