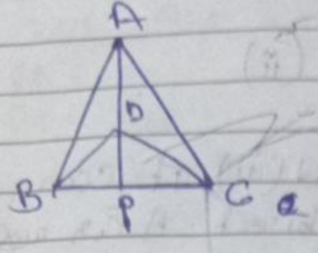
Exercise - 7.3

(1)



In the above question, it is given that ΔABC and ΔDBC are two isosceles triangles.

(i) ΔABD and ΔACD are similar by SSS congruency because

$AD = AD$

$AB = AC$

$BD = CD$

$\therefore \Delta ABD \; \Delta ACD$.

(ii) ΔABP and ΔACP are similar as:

$AP = AP$

$PAB = PAC$

$AB = AC$

So, $\Delta ABP \; \Delta ACP$ by SAS congruency condition.

(iii) $PAB = PAC$ by CPCT as $\Delta ABD \; \Delta ACD$

AP bisects A. (i)

ΔBPD and ΔCPD are similar by SSS congruency

PD = PD
BD = CD
BP = CP

So, $\Delta BPD \; \Delta CPD$

Thus, BDP = CDP by CPCT (ii)

Now; by comparing (i) and (ii). It can be said that AP bisect A as well as D.

(iv) BPD = CPD and BP = CP (i)

also

BPD + CPD = 180°

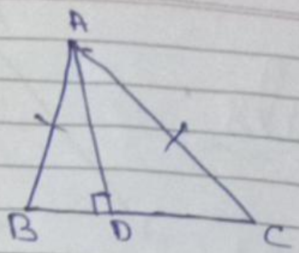
$\Rightarrow$ 2BPD = 180°

$\Rightarrow$ BPD = 90° - (ii)

~~AP is an altitude of an isosceles triangle ABC in which AB~~

AP is the perpendicular bisector of BC.

(2)



(i) In ΔABD and ΔACD,

$ADB = ADC = 90^\circ$

$AB = AC$

$AD = AD$

$\therefore \Delta ABD \; \Delta ACD$ by RHS congruence condition,

by the rule of CPCT,

$BD = CD$

So, AD bisects BC

(ii) Again, by the rule of CPCT, $BAD = CAD$

Hence, AD bisects A.