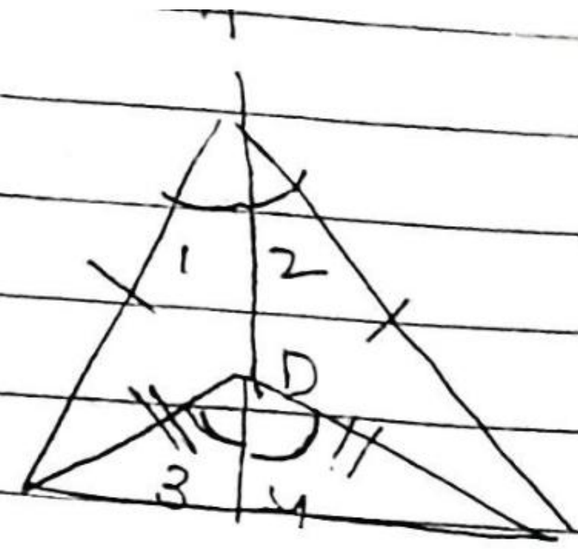
ex-7.3

1. Proof- In $\triangle ABD$ and $\triangle ACD$



$AB = AC$ (given)

$AD = DA$ (common)

$BD = CD$ (given)

$\triangle ABD \cong \triangle ACD$ (SSS)

$\angle 1 = \angle 2$ (CPCT) ——— (1)

In $\triangle ABP$ and $\triangle ACP$

$AB = AC$ (given)

$AP = PA$ (common)

$\angle 1 = \angle 2$ ((proved)

$\triangle ABP \cong \triangle ACP$ (SAS)

$\angle APB = \angle APC$ (CPCT)

$\angle APB + \angle APC = 180$ (LP)

$\angle APB = \angle APC = 90^\circ$

AP is the perpendicular bysector

In Δ BDP and Δ CDP

BD = CB (given)

DP = PD (common)

∠DPB = ∠DPC (90°)

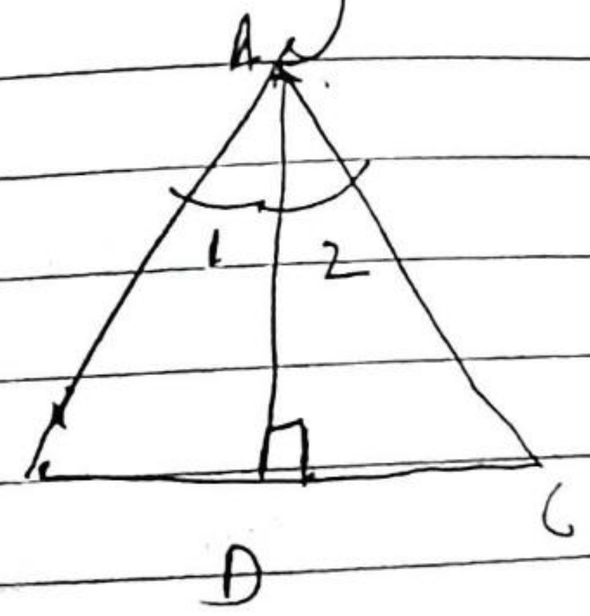
Δ BDP ≅ Δ CDP (RHS)

∠3 = ∠4 (CPCT) ——— (2)

from (1) and (2) AP is the bysector of ∠A and ∠D.

2. To prove DA bysects BC

AD bysect CA



In Δ ABD and Δ ADC -

AB = AC (given)

∠ADB = ∠ADC (90°)

AD = AD (common)

Δ ABD ≅ Δ ADC (RHS)

BD = DC (CPCT)

∠1 = ∠2 (CPCT)

AD bysects ∠A.