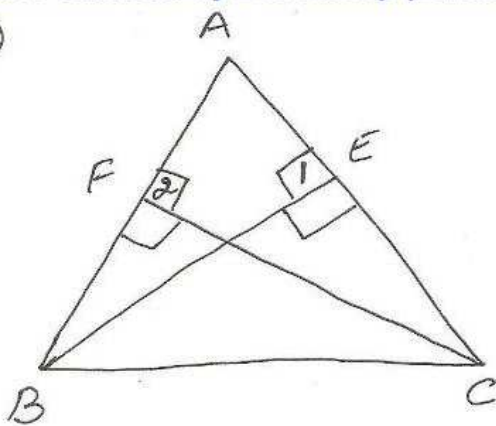


④



To prove $\triangle ABE \cong \triangle ACF$
 $AB = AC$

Proof In $\triangle ABE$ and $\triangle ACF$

$$\angle A = \angle A$$

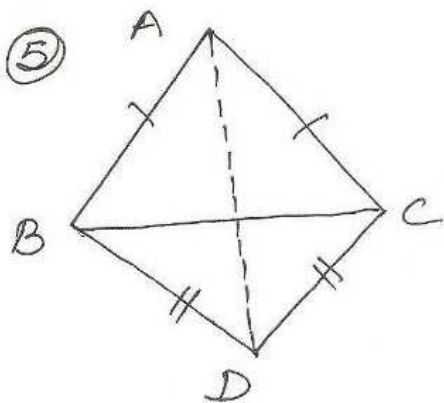
$$\angle 1 = \angle 2 = 90^\circ$$

$$BE = CF \text{ (given)}$$

$\therefore \triangle ABE \cong \triangle ACF$ by
 AAS con.

$$AB = AC \text{ (cpct)}$$

⑤



To show $\angle ABD = \angle ACD$
 Const - join AD

Proof In $\triangle ABD$ and $\triangle ACD$

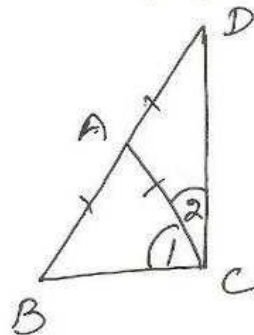
$$AB = AC \text{ (given)}$$

$$DB = DC \text{ (given)}$$

$$AD = AD$$

$\therefore \triangle ABD \cong \triangle ACD$ by SSS
 $\angle ABD = \angle ACD$ (cpct) ~~prop~~

②



To prove $\angle DCB = 90^\circ$

Proof $AB = AC$ (given)
 $AD = AB$ (given) ... ①

From ①, ②

$$AB = AC = AD$$

In $\triangle ABC$

$$AB = AC$$

$$\angle 1 = \angle B \dots \text{③ (isos } \triangle \text{ prop)}$$

In $\triangle ACD$

$$AC = AD$$

$$\angle D = \angle 2 \dots \text{④ (do)}$$

In $\triangle DCB$

$$\angle D + \angle B + \angle DCB = 180^\circ$$

$$\angle 2 + \angle 1 + \angle DCB = 180^\circ$$

$$\left[\begin{array}{l} \because \angle 1 = \angle B \\ \angle D = \angle 2 \end{array} \right]$$

$$\angle DCB + \angle DCB = 180^\circ$$

$$\Rightarrow 2\angle DCB = 180^\circ$$

$$\Rightarrow \angle DCB = 90^\circ$$