



Properties of Triangles Ex 15.3 Q11

Answer :

(i)

Here,

$$\angle BAF + \angle FAD = 180^\circ \text{ (Linear pair)}$$

$$\Rightarrow \angle FAD = 180^\circ - \angle BAF = 180^\circ - 90^\circ = 90^\circ$$

Also,

$$\angle AFE = \angle ADF + \angle FAD \text{ (Exterior angle property)}$$

$$\angle ADF + 90^\circ = 130^\circ$$

$$\angle ADF = 130^\circ - 90^\circ = 40^\circ$$

(ii)

We know that the sum of all the angles of a triangle is 180° .

Therefore, for $\triangle BDE$, we can say that :

$$\angle BDE + \angle BED + \angle DBE = 180^\circ.$$

$$\Rightarrow \angle DBE = 180^\circ - \angle BDE - \angle BED = 180^\circ - 90^\circ - 40^\circ = 50^\circ \dots (i)$$

Also,

$$\angle FAD = \angle ABC + \angle ACB \text{ (Exterior angle property)}$$

$$\Rightarrow 90^\circ = 50^\circ + \angle ACB$$

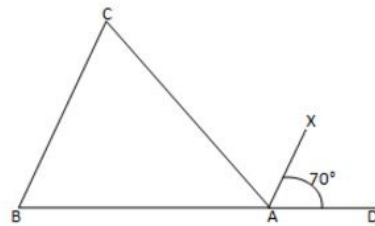
Or,

$$\angle ACB = 90^\circ - 50^\circ = 40^\circ$$

$$(iii) \angle ABC = \angle DBE = 50^\circ \text{ [From (i)]}$$

Properties of Triangles Ex 15.3 Q12

Answer :



Here,

$$\angle CAX = \angle DAX \text{ (}\because AX \text{ bisects } \angle CAD\text{)}$$

$$\Rightarrow \angle CAX = 70^\circ$$

$$\angle CAX + \angle DAX + \angle CAB = 180^\circ$$

$$70^\circ + 70^\circ + \angle CAB = 180^\circ$$

$$\angle CAB = 180^\circ - 140^\circ$$

$$\angle CAB = 40^\circ$$

$$\angle ACB + \angle CBA + \angle CAB = 180^\circ \text{ (Sum of the angles of } \triangle ABC\text{)}$$

$$\angle ACB + \angle ACB + 40^\circ = 180^\circ \text{ (}\because \angle C = \angle B\text{)}$$

$$2\angle ACB = 180^\circ - 40^\circ$$

$$\angle ACB = \frac{140^\circ}{2}$$

$$\Rightarrow \angle ACB = 70^\circ$$

***** END *****