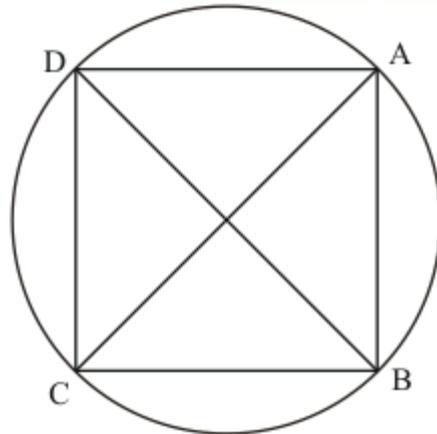




Circles Ex 16.5 Q18

**Answer :**

(i) It is given that  $BC \parallel AD$ ,  $\angle ADC = 110^\circ$  and  $\angle BAC = 50^\circ$



We have to find  $\angle DAC$

In cyclic quadrilateral

$$\angle A + \angle C = 180^\circ \dots\dots (1)$$

$$\angle B + \angle D = 180^\circ \dots\dots (2)$$

Since  $\angle ADC = 110^\circ$

So

$$\begin{aligned} \angle B &= 180^\circ - \angle D \\ &= 180^\circ - 110^\circ \\ &= 70^\circ \end{aligned}$$

Therefore in  $\triangle ABC$ ,  $50^\circ + 70^\circ + \angle BCA = 180^\circ$

So  $\angle BCA = 60^\circ \dots\dots (3)$

Now  $\angle BCA = \angle CAD$  ( $BC \parallel AD$  and  $AC$  is transversal)

$$\Rightarrow \angle BCA = \angle CAD = \boxed{60^\circ}$$

(ii) It is given that,  $BC \parallel AD$ ,  $\angle DBC = 80^\circ$  and  $\angle BAC = 40^\circ$

We have to find  $\angle BCD$

$$\angle BAC = \angle BDC = 40^\circ \text{ (Same segment)}$$

$$\begin{aligned} \angle DCB &= 180^\circ - (80^\circ + 40^\circ) \\ &= 180^\circ - 120^\circ \\ &= 60^\circ \end{aligned}$$

Hence  $\boxed{\angle BCD = 60^\circ}$

(iii) It is given that,  $\angle BCD = 100^\circ$  and  $\angle ABD = 70^\circ$

We have to find  $\angle ABD$

Now

$$\angle A + \angle C = 180^\circ$$

$$\begin{aligned}\angle A &= 180^\circ - 100^\circ \\ &= 80^\circ\end{aligned}$$

In  $\triangle ABD$  we have

$$\angle A + \angle ABD + \angle BDA = 180^\circ$$

$$\begin{aligned}\angle ADB &= 180^\circ - 150^\circ \\ &= 30^\circ\end{aligned}$$

Hence  $\boxed{\angle ABD = 30^\circ}$

\*\*\*\*\* END \*\*\*\*\*