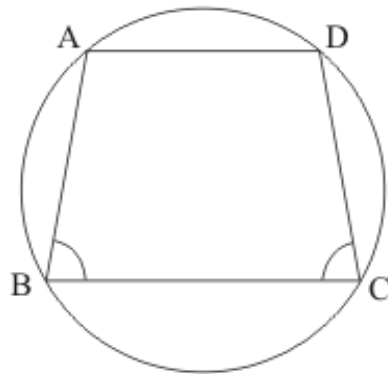




Circles Ex 16.5 Q5

Answer :

It is given that, $ABCD$ is cyclic quadrilateral in which $AD \parallel BC$



We have to prove $\angle B = \angle C$

Since $ABCD$ is cyclic quadrilateral

So

$$\angle B + \angle D = 180^\circ \text{ and } \angle A + \angle C = 180^\circ \dots\dots (1)$$

$$\Rightarrow \angle B + \angle A = 180^\circ \text{ and } \angle C + \angle D = 180^\circ \text{ (by property of } \parallel \text{ line intersect) } \dots\dots (2)$$

From equation (1) and (2) we have

$$\angle B + \angle D + \angle B + \angle A = 360^\circ \dots\dots (3)$$

$$\angle A + \angle C + \angle C + \angle D = 360^\circ \dots\dots (4)$$

Here both right are 360° of equation (3) and (4)

So

$$2\angle B + \angle D + \angle A = 2\angle C + \angle A + \angle D$$

$$2\angle B = 2\angle C$$

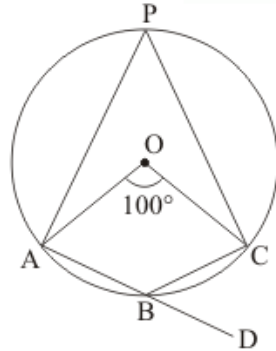
$$\angle B = \angle C$$

Hence $\boxed{\angle B = \angle C}$ Proved.

Circles Ex 16.5 Q6

Answer :

It is given that, $\angle AOC = 100^\circ$



We have to find $\angle CBD$

Since $\angle AOC = 100^\circ$ (given that)

So

$$\angle APC = \frac{1}{2} \angle AOC \text{ (} \angle AOC \text{ is on center and } \angle APC \text{ on circumference)}$$

$$\begin{aligned} \Rightarrow \angle APC &= \frac{1}{2} \times 100 \\ &= 50^\circ \end{aligned}$$

Now

$$\begin{aligned} \angle APC &= \frac{1}{2} \angle AOC \\ &= 50^\circ \end{aligned}$$

Now $\angle APC + \angle ABC = 180^\circ$ (opposite pair of angle of cyclic quadrilateral)

So

$$\begin{aligned} 50^\circ + \angle ABC &= 180^\circ \\ \angle ABC &= 180^\circ - 50^\circ \\ &= 130^\circ \end{aligned}$$

$$\Rightarrow \angle ABC = 130^\circ \dots\dots (1)$$

$\angle ABC + \angle CBD = 180^\circ$ (Linear angle at point D)

$$130^\circ + \angle CBD = 180^\circ \text{ (} \angle ABC = 130^\circ \text{)}$$

$$\begin{aligned} \angle CBD &= 180^\circ - 130^\circ \\ &= 50^\circ \end{aligned}$$

Hence $\boxed{\angle CBD = 50^\circ}$

***** END *****