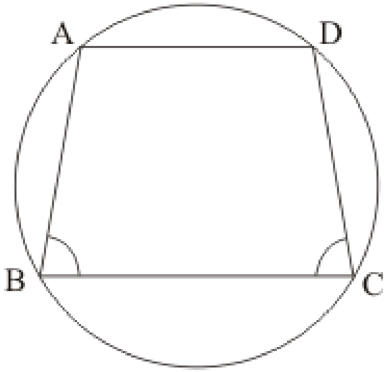
Circles Ex 16.5 Q5

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

$\angle B + \angle D = 180^0$ and $\angle A + \angle C = 180^0$ ...... (1)

$\Rightarrow \angle B + \angle A = 180^0$ and $\angle C + \angle D = 180^0$ (by property of || line intersect) ...... (2)

From equation (1) and (2) we have

$\angle B + \angle D + \angle B + \angle A = 360^0$ ...... (3)

$\angle A + \angle C + \angle C + \angle D = 360^0$ ...... (4)

Here both right are 360^0 of equation (3) and (4)

So

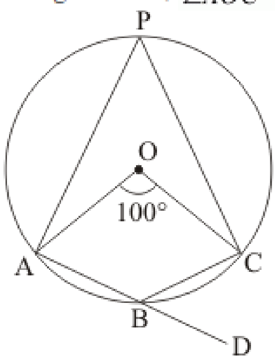
$$2\angle B + \angle D + \angle A = 2\angle C + \angle A + \angle D$$
$$2\angle B = 2\angle C$$
$$\angle B = \angle C$$

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

Circles Ex 16.5 Q6

Answer :

It is given that, $\angle AOC = 100^0$



We have to find $\angle CBD$

Since $\angle AOC = 100^0$ (given that)

So

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

$$\Rightarrow \angle APC = \frac{1}{2}\times 100$$
$$= 50^0$$

Now

$$\angle APC = \frac{1}{2}\angle AOC$$
$$= 50^0$$

Now $\angle APC + \angle ABC = 180^0$ (opposite pair of angle of cyclic quadrilateral)

So

$$50^0 + \angle ABC = 180^0$$
$$\angle ABC = 180^0 - 50^0$$
$$= 130^0$$

$\Rightarrow \angle ABC = 130^0$ ...... (1)

$\angle ABC + \angle CBD = 180^0$ (Linear angle at point D)

$130^0 + \angle CBD = 180^0$ ($\angle ABC = 130^0$)

$$\angle CBD = 180^0 - 130^0$$
$$= 50^0$$

Hence $\boxed{\angle CBD = 50^0}$

*********** END **********