Exercise 11C

Question 12:

ABCD is a cyclic quadrilateral.

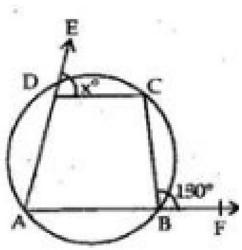
We know that in a cyclic quadrilateral exterior angle = interior opposite angle.

$$\therefore \quad \angle CBF = \angle CDA = (180^\circ - x)$$

$$\Rightarrow \quad 130^\circ = 180^\circ - x$$

$$\Rightarrow \quad x = 180^\circ - 130^\circ = 50^\circ$$

$$x = 50^\circ$$



Question 13:

AB is a diameter of a circle with centre O and DO $\parallel$ CB,

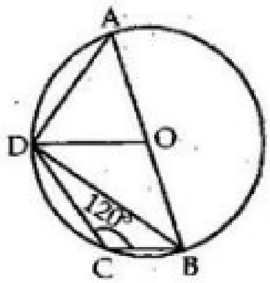
$\angle BCD = 120^\circ$

(i) Since ABCD is a cyclic quadrilateral

$\therefore \quad \angle BCD + \angle BAD = 180^\circ$

$\Rightarrow \quad 120^\circ + \angle BAD = 180^\circ$

$\Rightarrow \quad \angle BAD = 180^\circ - 120^\circ = 60^\circ$



(ii) $\angle BDA = 90^\circ$ [angle in a semi circle]

In ΔABD we have

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

$\Rightarrow \quad 90^\circ + 60^\circ + \angle ABD = 180^\circ$

$\Rightarrow \quad \angle ABD = 180^\circ - 150^\circ = 30^\circ$

(iii) OD = OA.

$\Rightarrow \quad \angle ODA = \angle OAD = \angle BAD = 60^\circ$

$\therefore \quad \angle ODB = 90^\circ - \angle ODA$

$= 90^\circ - 60^\circ = 30^\circ$

Since DO $\parallel$ CB, alternate angles are equal

$\Rightarrow \quad \angle CBD = \angle ODB$

$= 30^\circ$

(iv) $\angle ADC = \angle ADB + \angle CDB$

$= 90^\circ + 30^\circ = 120^\circ$

Also, in ΔAOD, we have

$\angle ODA + \angle OAD + \angle AOD = 180^\circ$

$\Rightarrow \quad 60^\circ + 60^\circ + \angle AOD = 180^\circ$

$\Rightarrow \quad \angle AOD = 180^\circ - 120^\circ = 60^\circ$

Since all the angles of ΔAOD are of 60° each

$\therefore \quad \Delta$ AOD is an equilateral triangle.

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