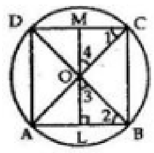
Exercise 11C

Question 26:

Given: Let ABCD be a cyclic quadrilateral whose diagonals AC and BD intersect at O at right angles.

Let $OL \perp AB$ such that LO produced meets CD at M.



To Prove: $CM = MD$

Proof: $\angle 1 = \angle 2$ [angles in the same segment]

$\angle 2 + \angle 3 = 90°$ $[\because \angle OLB = 90°]$

$\angle 3 + \angle 4 = 90°$ $[\because$ LOM is a straight line and $\angle BOC = 90°]$

$\therefore \quad \angle 2 + \angle 3 = \angle 3 + \angle 4$

$\Rightarrow \quad \angle 2 = \angle 4$

Thus, $\angle 1 = \angle 2$

and $\angle 2 = \angle 4$

$\Rightarrow \quad \angle 1 = \angle 4$

$\therefore \quad OM = CM$

Similarly, $OM = MD$

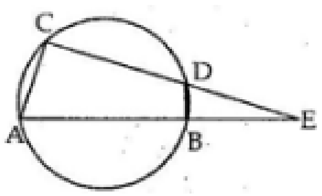
Hence, $CM = MD$.

Question 27:

Chord AB of a circle is produced to E.

If one side of a cyclic quadrilateral is produced then the exterior angle is equal to the interior opposite angle.

$\therefore$ Ext. $\angle BDE = \angle BAC = \angle EAC$ ....(1)



Chord CD of a circle is produced to E

$\therefore$ Ext. $\angle DBE = \angle ACD = \angle ACE$.....(2)

Consider the triangles ΔEDB and ΔEAC.

$\angle BDE = \angle CAE$ [from(1)]

$\angle DBE = \angle ACE$ [from(2)]

$\angle E = \angle E$ [common]

$\therefore \quad \Delta EDB \sim \Delta EAC$.

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