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Subject:-Mathematics

Class:-IX ST:-Prabhat Ranjan Date:-11-12-21

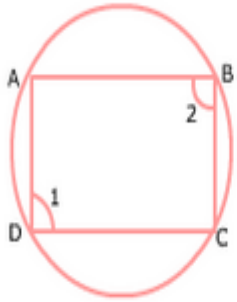
Solve The Following Questions:-

Question No. 1:-----

Prove that a cyclic parallelogram is a rectangle.

Solution:

Given: ABCD is a cyclic parallelogram



To Prove: ABCD is a rectangle

Proof: ∴ ABCD is a cyclic quadrilateral

∴ $\angle 1 + \angle 2 = 180°$ ...(1) (∵ opposite angles of a cyclic quadrilateral are supplementary)

∴ ABCD is a parallelogram

∴ $\angle 1 = \angle 2$ ....(2) (∵ Opposite angles of a parallelogram)

From equations (1) and (2),

$\angle 1 = \angle 2 = 90°$

∴ Parallelogram ABCD is a rectangle.

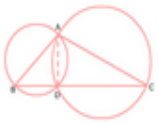
Question No.2:-----

If circles are drawn taking two sides of a triangle as diameters, prove that the point of intersection of these circles lie on the third side.

Solution:

Given: Circles are described with sides AB and AC of a triangle ABC as diameters. They intersect in a point D.

To Prove: D lies on the third side BC of Δ ABC.



Construction: Join AD.

Proof: Circle described on AB as diameter intersects BC in D.

$\therefore \angle ADB = 90°$ | Angle in a semi-circle

But $\angle ADB + \angle ADC = 180°$ | Linear Pair Axiom

$\angle ADC = 90°$.

Hence, the circle described on AC as diameter must pass through D.

Thus, the two circles intersect in D.

Now, $\angle ADB + \angle ADC = 180°$.

$\therefore$ Points B, D, C are collinear.

$\therefore$ D lies on BC.