

Mathematics

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(Chapter - 10)(Circles)

(Class - 9)

Exercise 10.3

Question 1:

Draw different pairs of circles. How many points does each pair have in common? What is the maximum number of common points?

Answer 1:



(i)



(ii)



(iii)



(iv)

In each pair either 0 or 1 or 2 points are common. The maximum number of common points is 2.

Question 2:

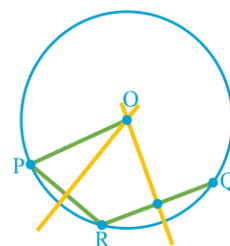
Suppose you are given a circle. Give a construction to find its centre.

Answer 2:

Given: Points P, Q and R lies on circle C (O, r).

Construction:

- Join PR and QR.
- Draw the perpendicular bisectors of PR and QR which intersects at point O.
- Taking O as centre and OP as radius, draw a circle.
- This is the required circle.



Question 3:

If two circles intersect at two points, prove that their centres lie on the perpendicular bisector of the common chord.

Answer 3:

Given: Circle C (P, r) and circle C (Q, r') intersects each other at the points A and B.

To prove: Points P and Q lies on the perpendicular bisector of common chord AB.

Construction: Join point P and Q to mid-point M of chord AB.

Proof: AB is chord of circle C (P, r) and PM is bisector of chord AB.

Therefore, $PM \perp AB$

[∵ The line drawn through the centre of a circle to bisect a chord is perpendicular to the chord.]

Hence, $\angle PMA = 90^\circ$

Similarly, AB is chord of circle C (Q, r') and QM is bisector of chord AB.

Therefore, $QM \perp AB$

[∵ The line drawn through the centre of a circle to bisect a chord is perpendicular to the chord.]

Hence, $\angle QMA = 90^\circ$

Now, $\angle PMA + \angle QMA = 90^\circ + 90^\circ = 180^\circ$

Since, $\angle PMA$ and $\angle QMA$ are forming linear pair. So PMQ is a straight line.

Hence, Points P and Q lies on the perpendicular bisector of common chord AB.

