



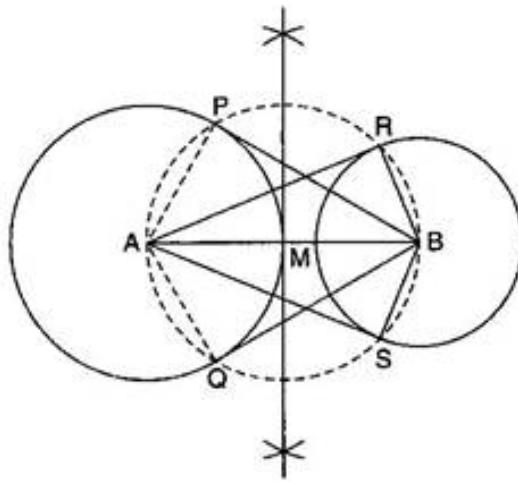
Exercise 11.2

$$\Rightarrow \angle ACB = 60^\circ$$

Q5. Draw a line segment AB of length 8 cm. Taking A as centre, draw a circle of radius 4 cm and taking B as centre, draw another circle of radius 3 cm. Construct tangents to each circle from the centre of the other circle.

Ans: To construct: A line segment of length 8 cm and taking A as centre, to draw a circle of radius 4 cm and taking B as centre, draw another circle of radius 3 cm. Also, to construct tangents to each circle from the centre to the other circle.

Steps of Construction:



- (a) Bisect BA. Let M be the mid-point of BA.
 - (b) Taking M as centre and MA as radius, draw a circle. Let it intersects the given circle at the points P and Q.
 - (c) Join BP and BQ.
Then, BP and BQ are the required two tangents from B to the circle with centre A.
 - (d) Again, Let M be the mid-point of AB.
 - (e) Taking M as centre and MB as radius, draw a circle. Let it intersects the given circle at the points R and S.
 - (f) Join AR and AS.
Then, AR and AS are the required two tangents from A to the circle with centre B.
- Justification: Join BP and BQ.

Then $\angle APB$ being an angle in the semicircle is 90° .

$$\Rightarrow BP \perp AP$$

Since AP is a radius of the circle with centre A , BP has to be a tangent to a circle with centre A . Similarly, BQ is also a tangent to the circle with centre A .

Again join AR and AS .

Then $\angle ARB$ being an angle in the semicircle is 90° .

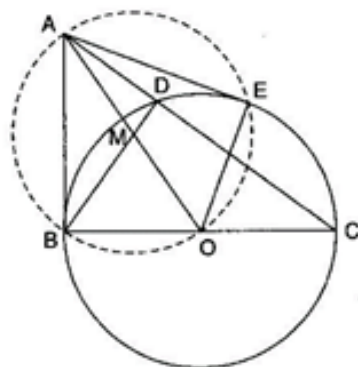
$$\Rightarrow AR \perp BR$$

Since BR is a radius of the circle with centre B , AR has to be a tangent to a circle with centre B . Similarly, AS is also a tangent to the circle with centre B .

Q6. Let ABC be a right triangle in which $AB = 6$ cm, $BC = 8$ cm and $\angle B = 90^\circ$. BD is the perpendicular from B on AC . The circle through B, C, D is drawn. Construct the tangents from A to this circle.

Ans: To construct: A right triangle ABC with $AB = 6$ cm, $BC = 8$ cm and $\angle B = 90^\circ$. BD is the perpendicular from B on AC and the tangents from A to this circle.

Steps of Construction:



- (a) Draw a right triangle ABC with $AB = 6$ cm, $BC = 8$ cm and $\angle B = 90^\circ$. Also, draw perpendicular BD on AC.
- (b) Join AO and bisect it at M (here O is the centre of circle through B, C, D).
- (c) Taking M as centre and MA as radius, draw a circle. Let it intersects the given circle at the points B and E.
- (d) Join AB and AE.

Then AB and AE are the required two tangents.

Justification: Join OE.

Then, $\angle AEO$ is an angle in the semicircle.

$$\Rightarrow \angle AEO = 90^\circ$$

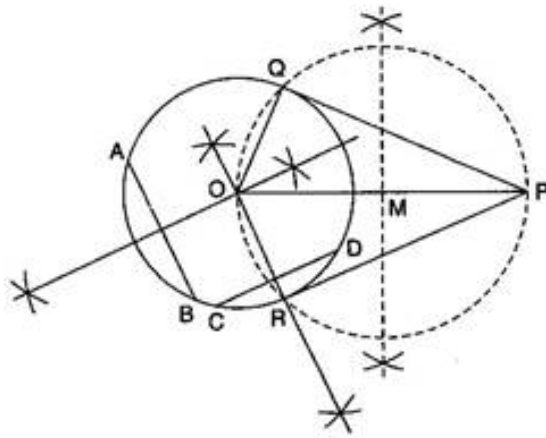
$$\Rightarrow AE \perp OE$$

Since OE is a radius of the given circle, AE has to be a tangent to the circle. Similarly, AB is also a tangent to the circle.

Q7. Draw a circle with the help of a bangle. Take a point outside the circle. Construct the pair of tangents from this point to the circle.

Ans: To construct: A circle with the help of a bangle. Take a point outside the circle. Construct the pair of tangents from this point to the circle.

Steps of Construction:



- (a) Draw a circle with the help of a bangle.
- (b) Take two non-parallel chords AB and CD of this circle.
- (c) Draw the perpendicular bisectors of AB and CD. Let these intersect at O. Then O is the centre of the circle draw.
- (d) Take a point P outside the circle.
- (e) Join PO and bisect it. Let M be the mid-point of PO.
- (f) Taking M as centre and MO as radius, draw a circle. Let it intersects the given circle at the points Q and R.
- (g) Join PQ and PR.

Then PQ and PR are the required two tangents.

Justification: Join OQ and OR.

Then, $\angle PQO$ is an angle in the semicircle.

$$\Rightarrow \angle PQO = 90^\circ$$

$$\Rightarrow PQ \perp OQ$$

Since OQ is a radius of the given circle, PQ has to be a tangent to the circle. Similarly, PR is also a tangent to the circle.

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