CIRCLES

PROPERTIES OF TANGENT TO A CIRCLE (THEOREM 3 AND 4)

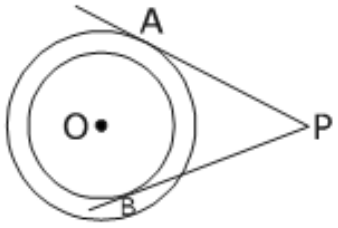
EXERCISE

Q.1 Two tangents TP and TQ are drawn to a circle with centre O from an external point T. Prove that $\angle PTQ = 2\angle OPQ$.

Q.2 Prove that the lengths of the tangents drawn from an external point to a circle are equal.

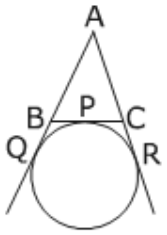
Q.3 Prove that the angle between the two tangents drawn from an external point to a circle is supplementary to the angle subtended by the line segments joining the points of contact at the centre.

Q.4 In the adjoining figure, two concentric circles with centre O are of radii 5 cm and 3 cm. From an external point P, tangents PA and PB are drawn to these circles. If AP = 12 cm, then find BP.

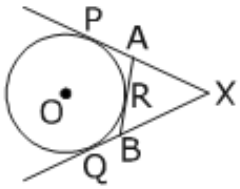


Q.5 (a) A circle is touching the side BC of a DABC at P and is touching AB and AC when produced at Q and R respectively.

Prove that AQ = (perimeter of DABC).

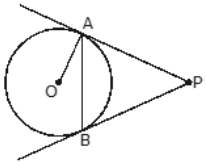


(b) In the adjoining figure, XP and XQ are two tangents to a circle with centre O from a point X outside the circle. ARB is a tangent to the circle at R. Prove that XA + AR = XB + BR.



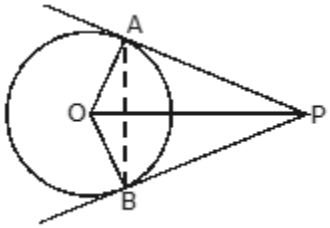
Q.6 Two concentric circles are of radii 5 cm and 3 cm. Find the length of the chord of the larger circle which touches the smaller circle. **ANS.** 8 cm

Q.7 In the adjoining figure, PA and PB are tangents drawn from an external point P to a circle with centre O. Prove that ∠APB = 2∠OAB.



Q.8 Prove that a parallelogram circumscribing a circle is a rhombus.

Q.9 In the adjoining figure, PA and PB are tangents to a circle with centre O. If OP is equal to the diameter of the circle, prove that ABP is an equilateral triangle.



Q.10 In the given figure, PA and PB are the tangent segments to a circle with centre O.

Show that the points A, O, B and P are concyclic.