

1. State and prove Pythagoras theorem. P and Q are points on the sides CA and CB respectively of a $\triangle ABC$ right angled at C. Prove that $AQ^2 + BP^2 = AB^2 + PQ^2$ using Pythagoras theorem. (5)
2. AC and BD are two chords of a circle that bisect each other. Prove that:
 - (i) AC and BD are diameters
 - (ii) ABCD is a rectangle. (3)
3. The sum of either pair of opposite angles of a cyclic quadrilateral is 180° . Prove. Using it prove exterior angle property of a cyclic quadrilateral (5)
4. The radii of two concentric circles are 13 cm. and 8 cm. respectively. AB is a diameter of the bigger circle. BD is a tangent to the smaller circle touching it at D. Find the length AD. (5)
5. The line joining the points (2,1) and (5,- 8) is trisected at the points P and Q. If P Lies on the line $2x - y + k = 0$, Find the value of k. (3)
6. If 'a' is the length of one of the sides of an equilateral triangle ABC, base BC lies on x - axis and vertex B is at the origin, find the coordinates of the vertices of triangle ABC. (3)

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