Geometry Question .

1. In Figure 1, $\angle BAC = 90^{\circ}$. AD $\parallel$ BC. Prove that $AB^2 + CD^2 = BD^2 + AC^2$.

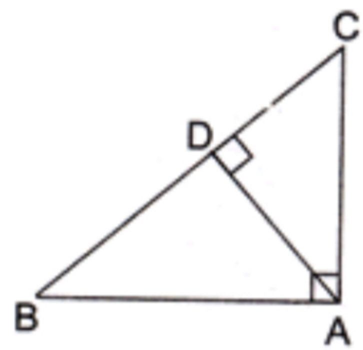

Figure 1: 1

2. In Figure 2, $PT = 6$ cm, $AR = 5$ cm. Find the length of PA.

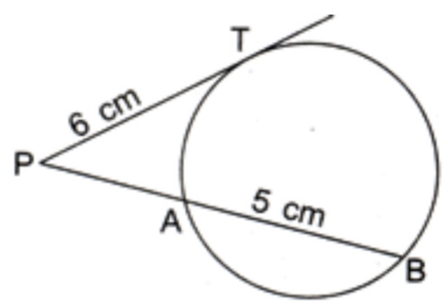

Figure 2: 2

3. Draw the graphs of the following equations: $3x - 4y + 6 = 0, 3x + y - 9 = 0$ Also, determine the co-ordinates of the vertices of the triangle formed by these lines and the x axis.

4. A solid is in the form of a right circular cylinder with hemispherical ends. The total height of the solid is 58 cm and the diameter of the cylinder is 28cm. Find the total surface area of the solid $\pi \approx \frac{22}{7}$

5. . Construct a triangle ABC in which BC = 7 cm, and median AD = 5 cm, $\angle A = 60°$ Write the steps of construction also.

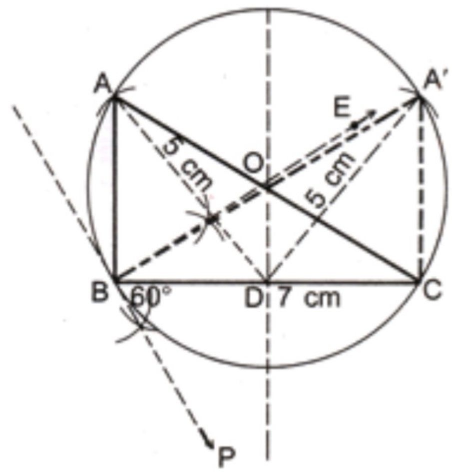

Figure 3: 3

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6. Show that the points A(6, 2), B(2, 1), C(1, 5) and D(5, 6) are the vertices of a square

7. Find the value of p for which the points (- 5, 1), (1, p) and $4, -2$ are collinear.

8. . Prove that in a right triangle, the square of the hypotenuse is equal to the sum of the squares of the other two sides.
Makeing ue of the above, prove the following:
in fig:4, aBCD is a fig:4 rhombus. prove that $4AB^2 = AC^2 + BD^2$.

9. Prove that I a line touch a circle and from the point of contact a chord is drawn, the angles which this chord makes with the given line are equal respectively to the angles formed in the corresponding alternate segments. Using the above, do the following:
AB is a diameter and AC is a chord of a circle such that $\angle BAC = 30°$. The tangent at C intersects AR produced in a point I Prove that BC = RD.

10. A man standing on the deck of a ship, which is 10 m above the water level, observes the angle of elevation of the top of a hill as 60° and the angle of

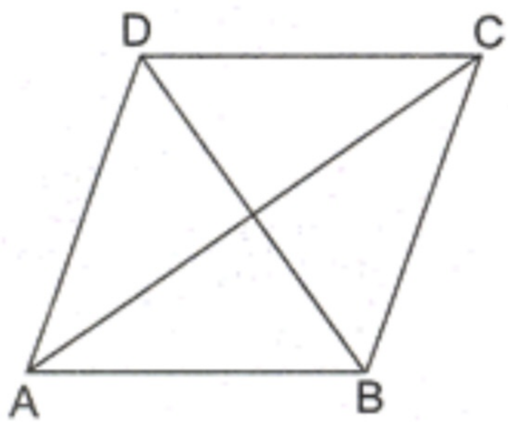

Figure 4: 4

depression of the base of the hill as 300. Calculate the distance of the hill from the ship and the height of the hill.

11. From a window x meters high above the ground in a street, the angles of elevation and depression of the top and foot of the other house on the opposite side of the street are α and β respectively. Show that the height of the opposite house is $x(1 + \tan\alpha \cot\beta)$ meters.