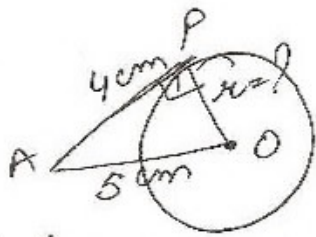


⑥



Sol $\angle = 90^\circ$

In rt $\triangle APO$

$$OP^2 = OA^2 - AP^2 \text{ (Pytha. theorem)}$$

$$= 5^2 - 4^2$$

$$= 25 - 16$$

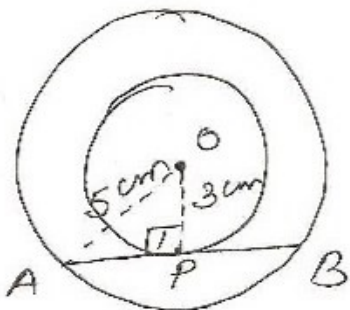
$$= 9$$

$$\Rightarrow OP = \sqrt{9}$$

$$= 3$$

\therefore radius = 3 cm

⑦



To find AB
const join OP, OA

Sol -

AB is tangent to smaller circle

$\therefore \angle = 90^\circ$

In rt $\triangle APO$

$$AP^2 = OA^2 - OP^2 \text{ (Pythagoras theorem)}$$

$$= 5^2 - 3^2$$

$$= 25 - 9$$

$$= 16$$

$$AP = \sqrt{16}$$

$$= 4$$

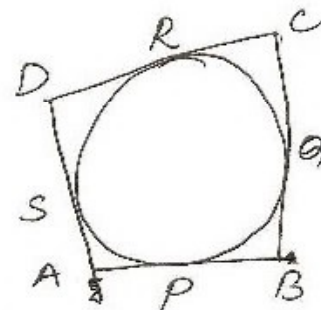
Sim. $BP = 4$

$$AB = AP + BP$$

$$= 4 + 4$$

$$= 8 \text{ cm}$$

⑧



To Prove

$$AB + CD = AD + BC$$

Proof

$$AS = AP \dots \textcircled{1}$$

$$BQ = BP \dots \textcircled{2}$$

$$CQ = CR \dots \textcircled{3}$$

$$DS = DR \dots \textcircled{4}$$

tangents from same external point to the circle

$$\textcircled{1} + \textcircled{2} + \textcircled{3} + \textcircled{4}$$

$$AS + DS + BQ + CQ$$

$$= AP + BP + CR + DR$$

$$\Rightarrow AD + BC = AB + CD$$