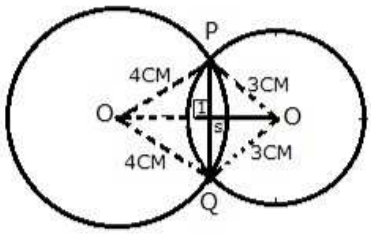
 ex 9.4, exemplar x

⑤ given - In fig. $OP = OQ = 3$ cm
$O'P = O'Q = 4$ cm
OP and O'P are tangents

to find PQ



proof $OP = OQ = 3$ cm
$O'P = O'Q = 4$ cm
$\therefore \square OPO'Q$ is a kite
$\Rightarrow PQ \perp OO'$ [diagonals of a kite are $\perp$ to each other]

$\therefore \angle 1 = 90^\circ$

$\angle O'PO = 90^\circ$ [radius $\perp$ tangent]

In rt $\triangle O'PO$
$(OO')^2 = (O'P)^2 + (OP)^2$ [Pythagoras theorem]
$= 4^2 + 3^2$
$= 16 + 9$
$= 25$
$\Rightarrow OO' = \sqrt{25}$
$= 5$ cm

$s = \frac{a+b+c}{2}$
$= \frac{3+4+5}{2}$
$= \frac{12}{2}$
$= 6$ cm

$ar(\triangle O'PO) = \sqrt{s(s-a)(s-b)(s-c)}$
$= \sqrt{6(6-3)(6-4)(6-5)}$
$= \sqrt{6 \times 3 \times 2 \times 1}$
$= 6$ cm^2