UDAAN

2026

Circles

MATHS LECTURE-5

BY-RITIK SIR

Topics *to be covered*

Important Questions (Part 4)

A Remaining Questions and Important One Markers

#Q. Assertion (A) : If a chord AB subtends an angle of 60° at the centre of a circle, then the angle between the tangents at A and B is also 60°.

Reason (R): The length of the tangent from an external point P on a circle with centre O is always less than OP.

#Gpk

1, 20

A Both Assertion (A) and Reason (R) are true and Reason (R) is correct explanation of Assertion (A).

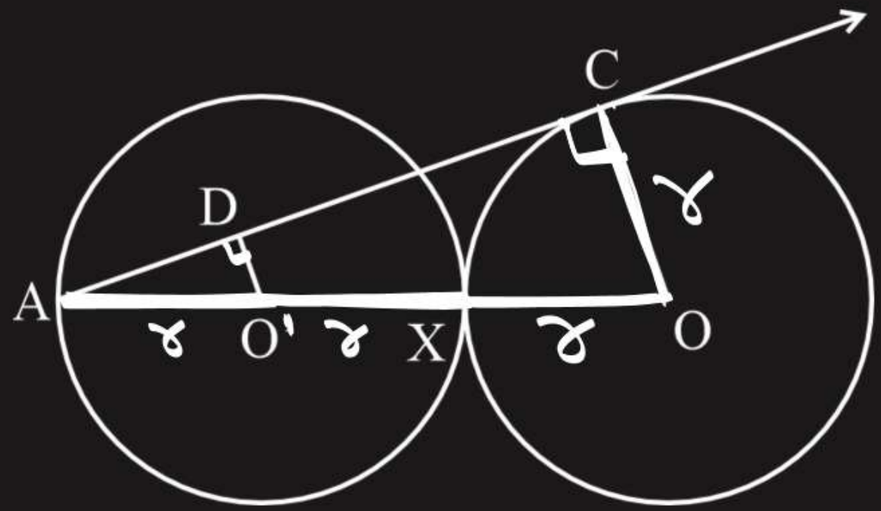
B Both Assertion (A) and Reason (R) are true but Reason (R) is not the correct explanation of Assertion (A).

C Assertion (A) is true but Reason (R) is false.

D Assertion (A) is false but Reason (R) is true.

#Q. In figure below, equal circles with centres O and O' touch each other at X. OO' produced to meet a circle O', at A. AC is a tangent to the circle whose centre is O. O'D is perpendicular to AC. Find the value of $\frac{DO'}{CO}$.

equal radius.



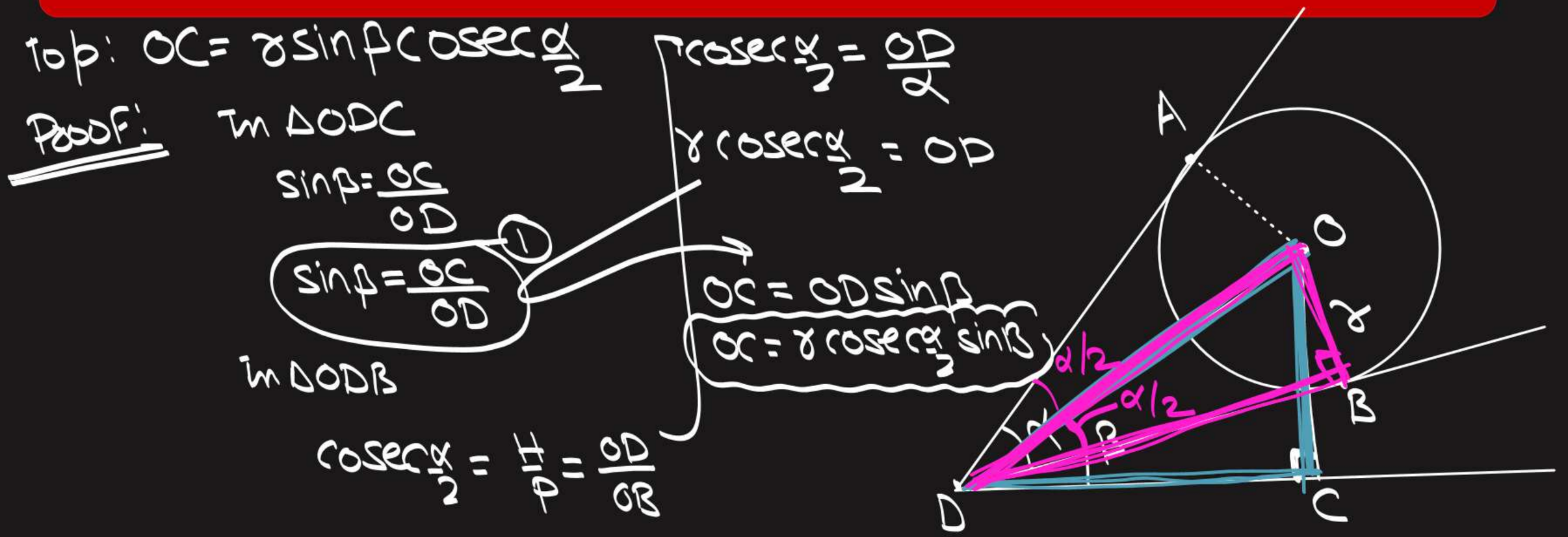
AA

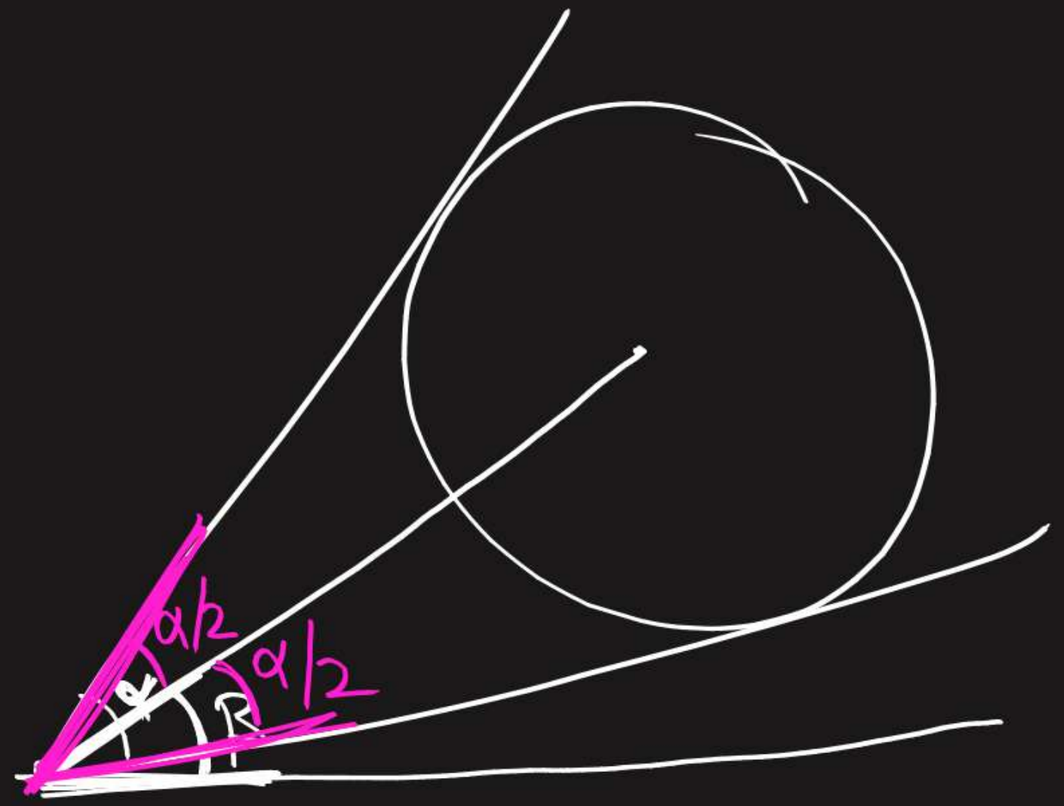
$\Delta ADO' \sim \Delta ACO$

By CPST, $\frac{AD}{AC} = \frac{DO'}{CO} = \frac{AO'}{AO}$

$\frac{DO'}{CO} = \frac{\gamma}{3\gamma} = \frac{1}{3}$

#Q. A round balloon of radius r subtends an angle α at the eye of the observer while the angle of elevation of its centre is β. Prove that the height of the centre of the balloon is $r \sin\beta \operatorname{cosec}\alpha/2$.

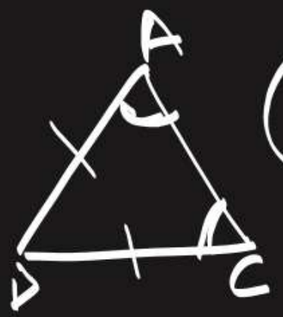



α/2
α/2
R

#Q. A spherical balloon of radius r subtends an angle of 60° at the eye of an observer. if the angle of elevation of its centre is 45°from the same point, then prove that height of the centre of the ballon is $\sqrt{2}$ times its radius.

1. 

$x+y+z=180^\circ$

2. 

$\angle A = \angle C$

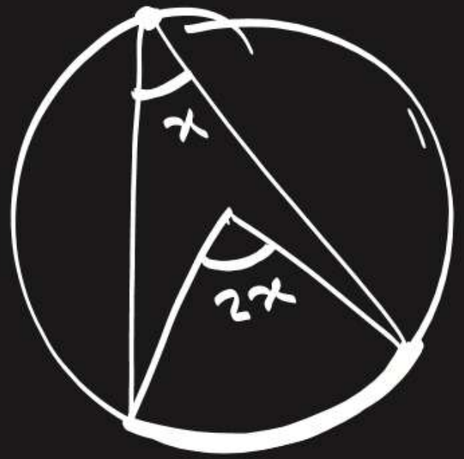
3. 

$x+y=180^\circ$

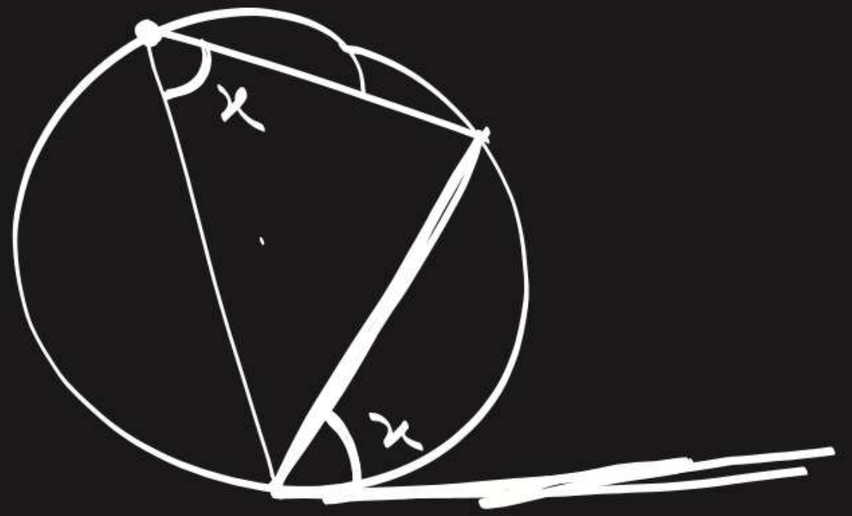
4. 

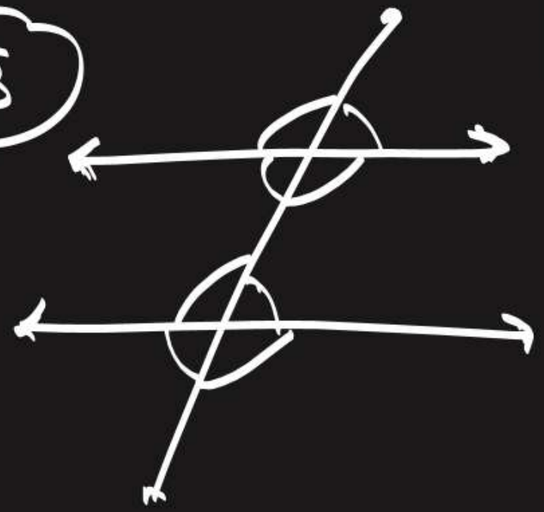
$x=y+z$

5. 

6. 

7. Alternate segment theorem [chord-tangent theorem]



8. 

#Q. In figure below, PQ is a tangent to the circle with centre O. If $\angle OPQ = x$, $\angle POQ = y$, then $x + y$ is :

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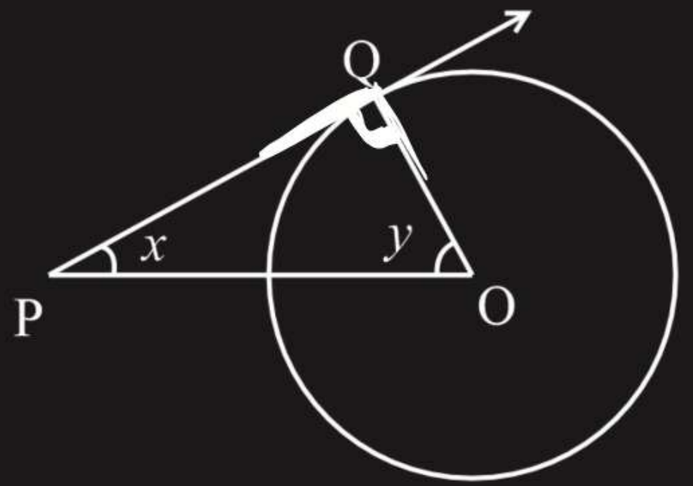

A 45°

B 90°

C 60°

D 180°

#Q. In figure below, TA is a tangent to the circle with centre O such that OT = 4 cm, $\angle OTA = 30°$, then length of TA is:

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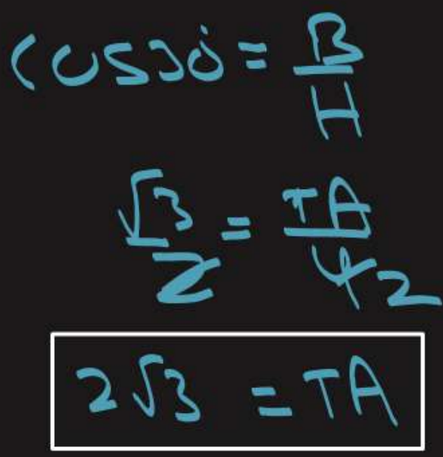
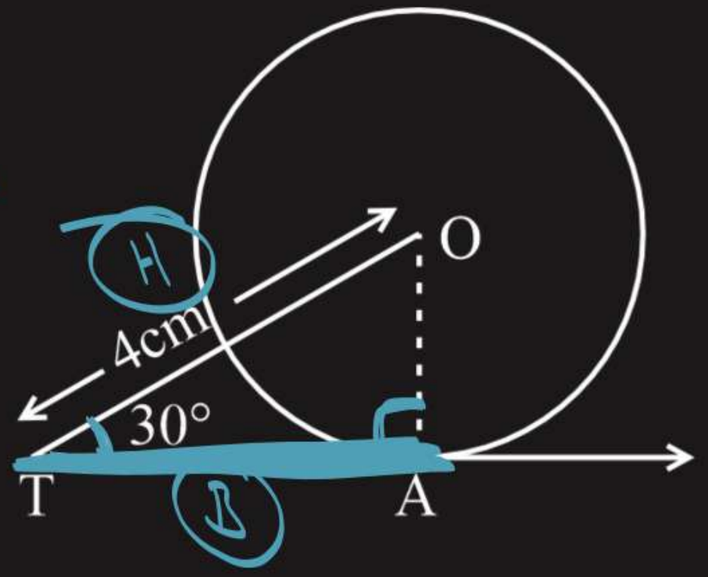
A $2\sqrt{3}$ cm

B 2 cm

C $2\sqrt{2}$ cm

D $\sqrt{3}$ cm





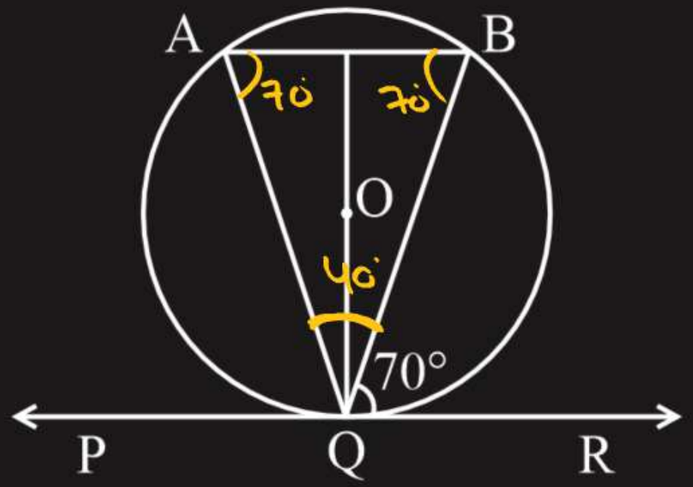
#Q. In figure below, if PQR is the tangent to a circle at Q whose centre is O, AB is a chord parallel to PR and $\angle BQR = 70°$, then $\angle AQB$ is equal to:

A. $20°$

B. $40°$

C. $35°$

D. $45°$



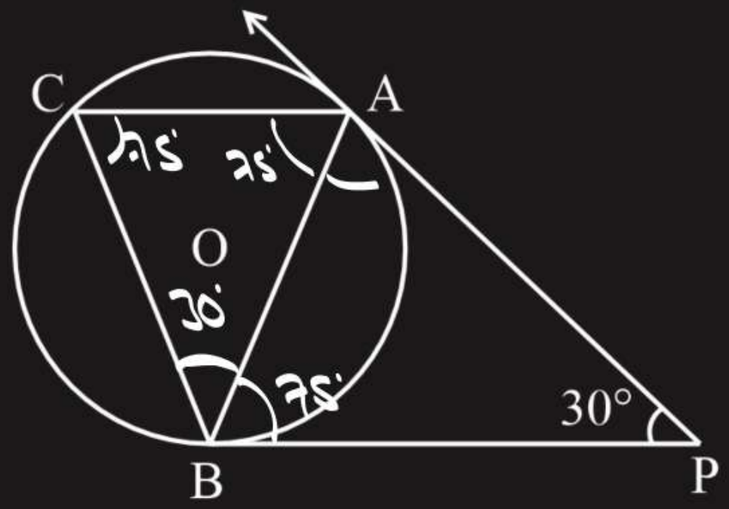
#Q. In figure below, if tangents PA and PB are drawn to a circle such that APB = 30° and chord AC is drawn parallel to the tangent Pb, then ∠ABC =

A 60°

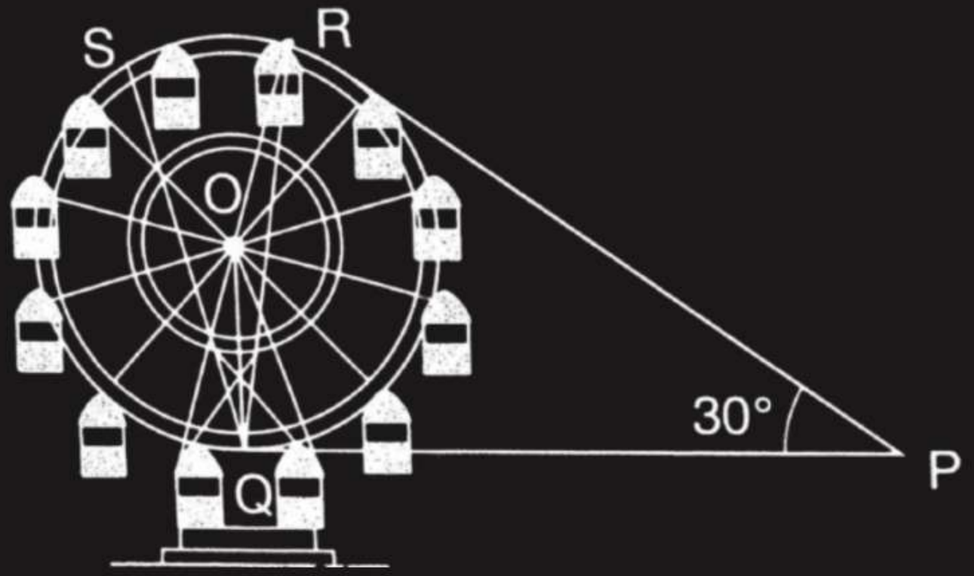
B 90°

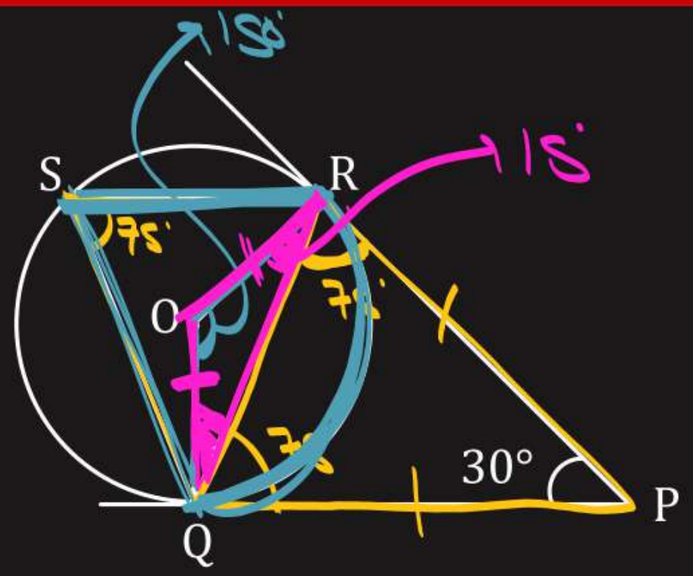
C 30°

D None of these



#Q. London eye is an amusement ride consisting of a rotating upright big wheel with multiple passenger-carrying components (commonly referred to as passenger cars, cabins, tubs, capsules, gondolas or pods) attached to the rim in such a way that as the wheel turns, they are kept upright usually by gravity. After taking a ride in London eye, Anu came out from the crowd and was observing her friends who were enjoying the ride. She was curious about the different angles and measures that the wheel will form. She makes a figure as given below.





Based on given information, answer the following questions.

(i) In given figure, the measure of $\angle ROQ$ is:

(a) 60° (b) 100° (c) 150° (d) 90°

(ii) In given figure, the measure of $\angle RQP$ is:

(a) 75° (b) 60° (c) 30° (d) 90°

(iii) In given figure, the measure of $\angle RSQ$ is:

(a) 60° (b) 75° (c) 100° (d) 30°

(iv) In given figure, the measure of $\angle ORP$ is:

(a) 90° (b) 70° (c) 100° (d) 60°

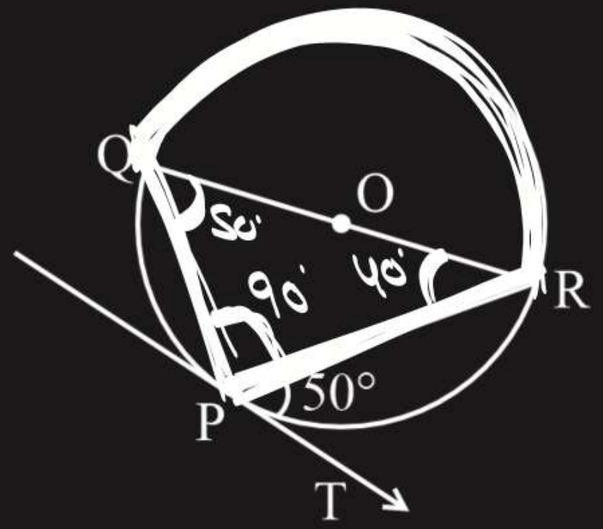
#Q. In figure below, PT is a tangent to the circle at P and QR is a diameter of the circle, if $\angle RPT = 50°$, then $\angle QRP =$

A 50°

B 90°

C 60°

D 40°



#Q. In figure below, PA and PB are tangents from external point P to a circle with centre C and Q is only opint on the circle. Then the measure of ∠AQB is:

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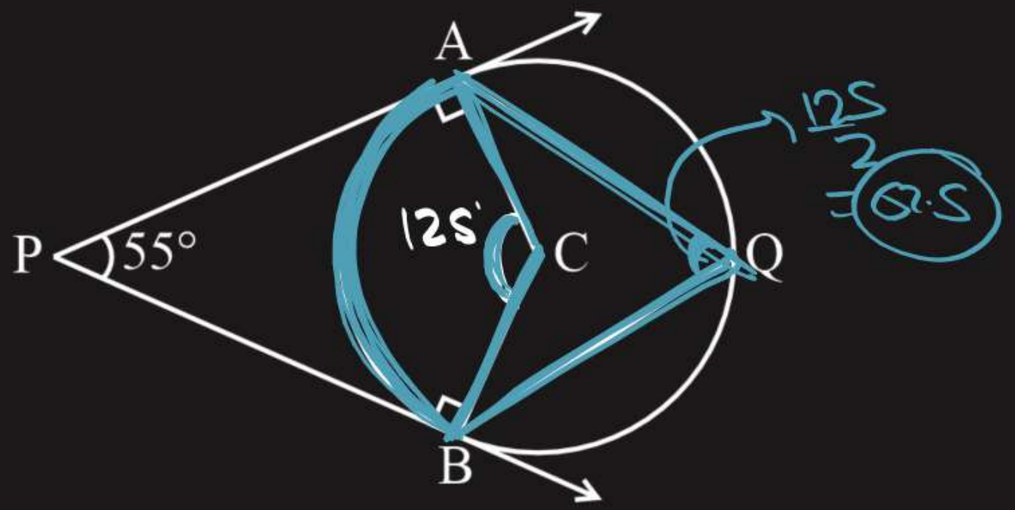
A 62.5°

B 125°

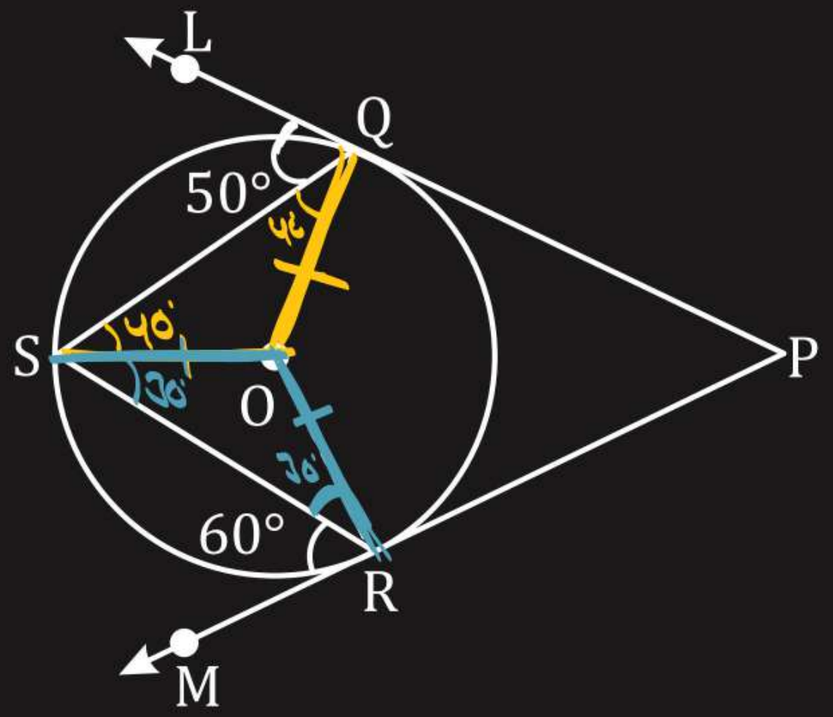
C 55°

D 90°

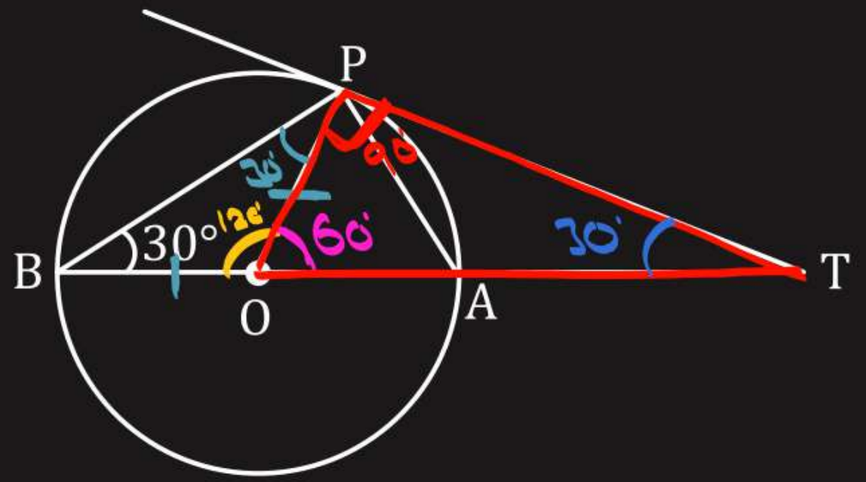


#Q. In fig. PQL and PRM are tangents to the circle with centre O at the points Q and R respectively and S is the point on the circle such that $\angle SQL = 50°$, $\angle SRM = 60°$. Then find $\angle QSR$.

70°



#Q. In fig. BOA is a diameter of a circle and the tangent at a point P meets on BA produced at T. If ∠PBO = 30°, then find ∠PTA.



#Q. In fig. AB is a diameter of a circle with centre O and AT is a tangent. If $\angle AOQ = 58°$, find $\angle ATQ$.

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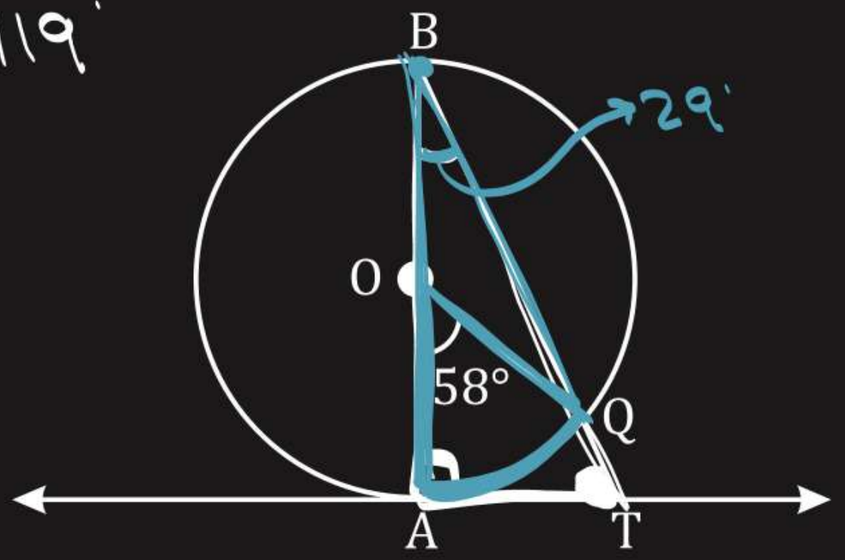
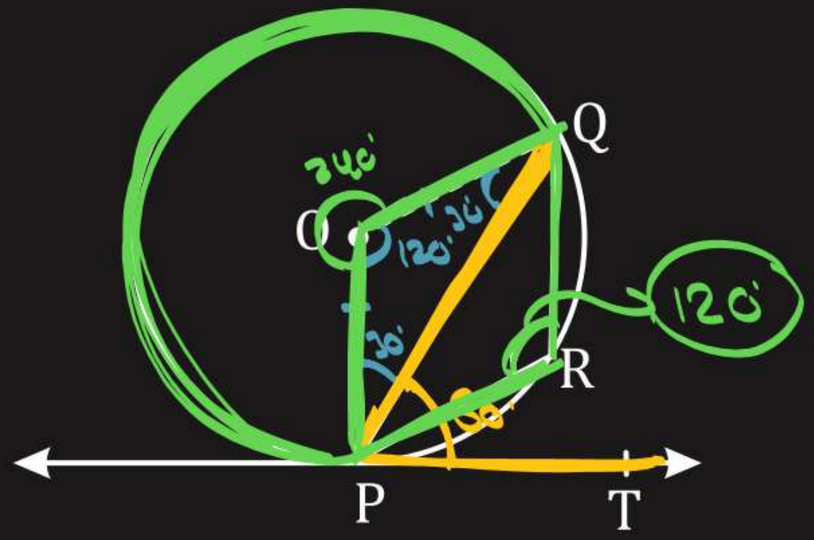
$\angle ATQ + 90° + 29° = 180°$

$\angle ATQ = 180° - 119°$

$= 61°$



#Q. In fig. PQ is a chord of a circle centre O and PT is a tangent. If $\angle QPT = 60°$, find $\angle PRQ$.



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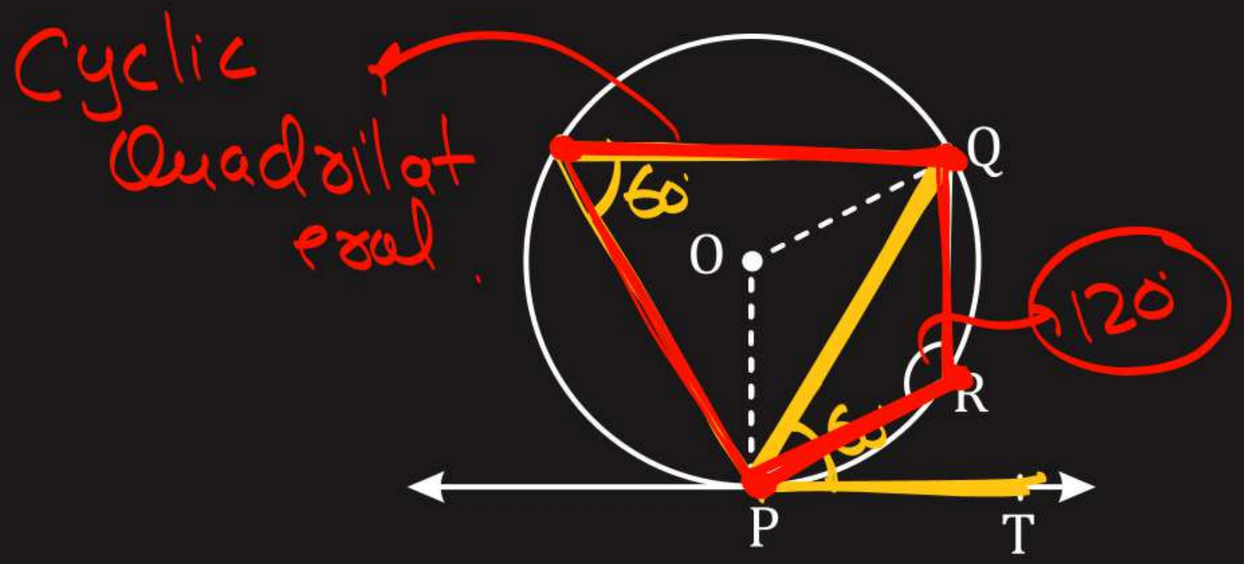
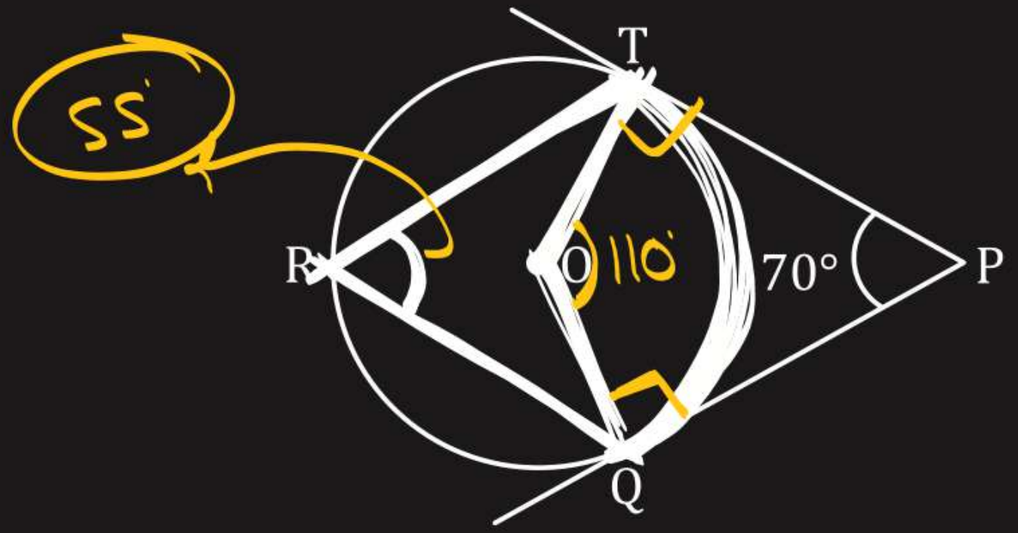


#Q. In fig., O is the centre of a circle. PT and PQ are tangents to the circle form an external point P. If ∠TPQ = 70°, find ∠TRQ.



#Q. In the given fig., PA and PB are tangents to a circle from an external point P such that PA = 4 cm and ∠BAC = 135°. Find the length of chord AB.

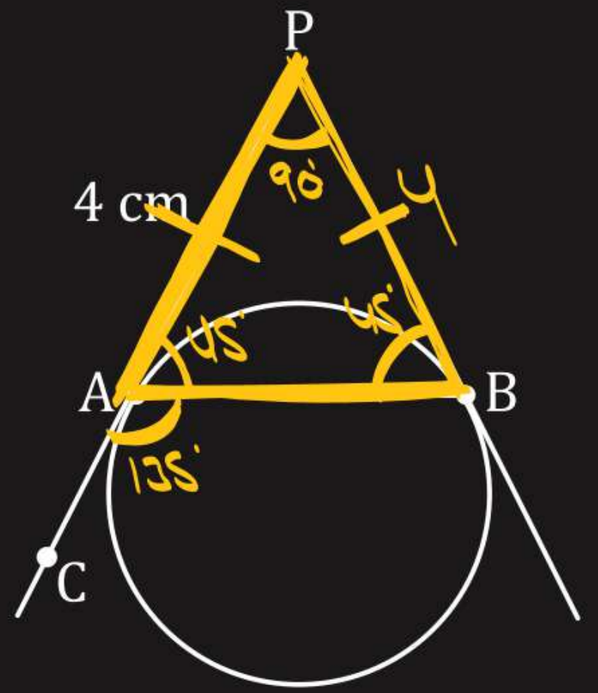
$4^2 + 4^2 = AB^2$

$32 = AB^2$

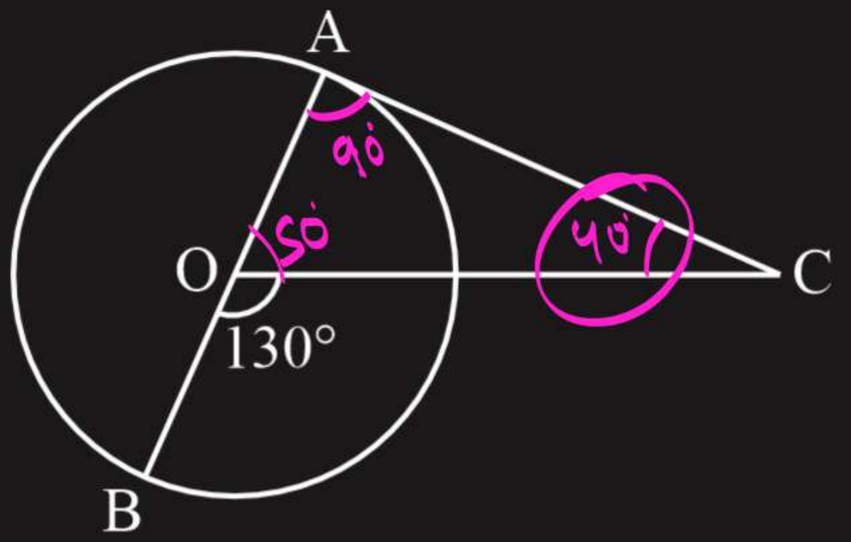
$\sqrt{32} = AB$

$2 \cdot 2 \cdot 2 \cdot 2 \cdot = AB$

$4\sqrt{2} = AB$

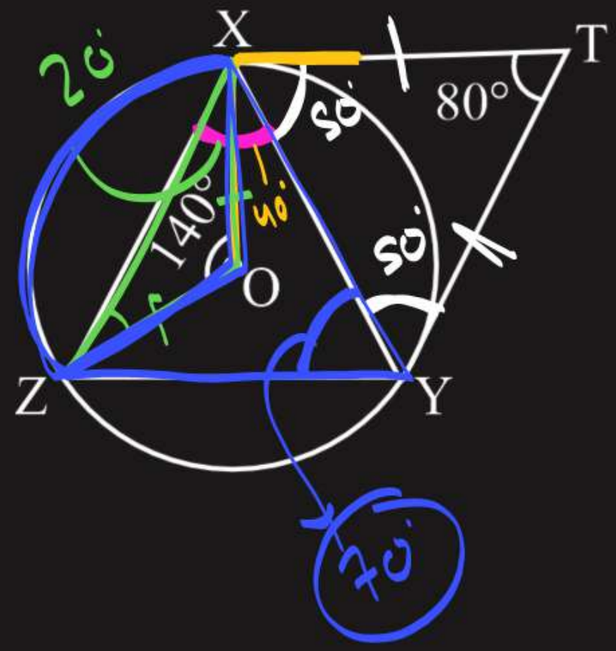


#Q. In the given figure, AOB is a diameter of a circle with center O and AC is a tangent to the circle at A. If $\angle BOC = 130°$, then find $\angle ACO$.



#Q. In the given figure, O is the centre of the circumcircle of triangle XYZ. Tangents at X and Y intersect at T. Given $\angle XTY = 80°$ and $\angle XOZ = 140°$.
Find the value of $\angle ZXY$.

60



#Q. In the given figure, O is the centre of the circle and QPR is a tangent to it at P. Prove that, $\angle QAP + \angle APR = 90°$.

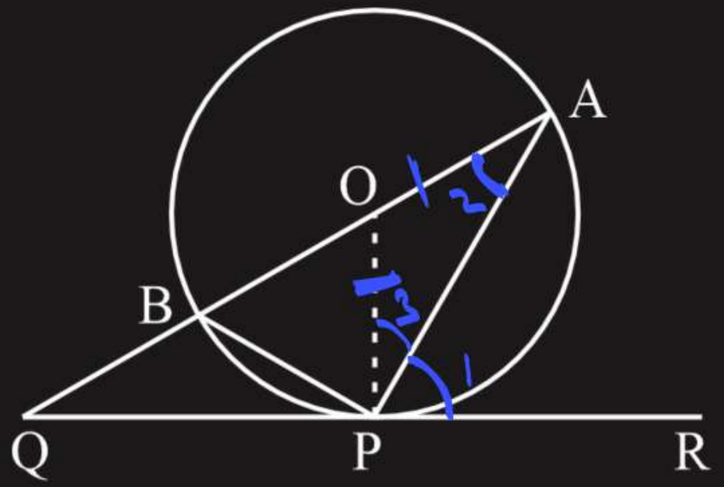
G:

To: $\angle 1 + \angle 2 = 90°$

Proof: $\angle 1 + \angle 3 = 90°$

$\angle 2 = \angle 3$

$\angle 1 + \angle 2 = 90°$ //



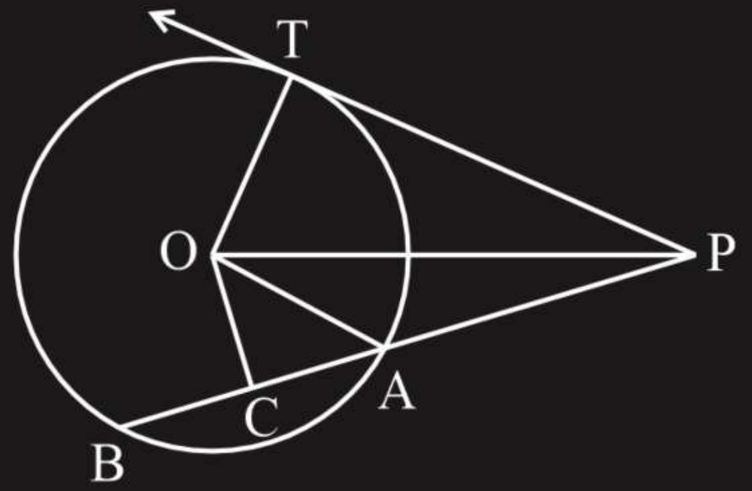
#Q. In the given figure, PT is a tangent to the circle centered at O. OC is perpendicular to chord AB. Prove that $PA \cdot PB = PC^2 - AC^2$.

#Gpy

Hint:

PA = PC - CA

PB = PC + BC



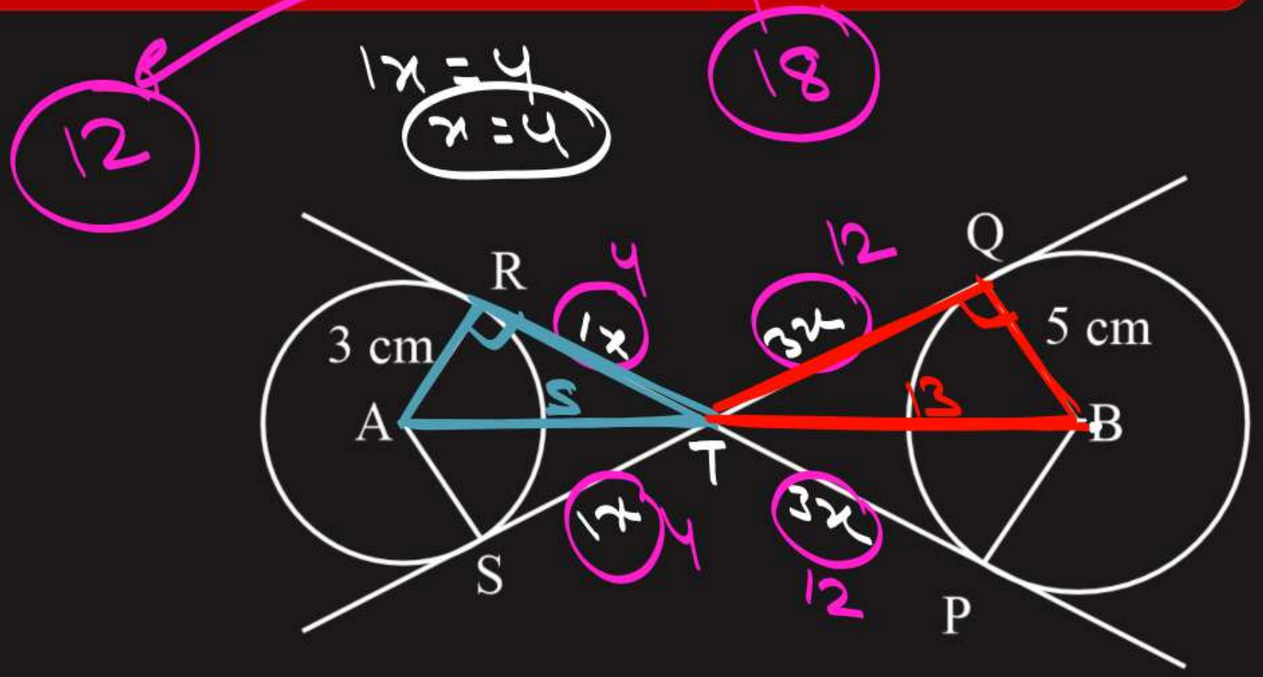
#Q. In the figure, RTP and STQ are common tangents to the two circles with centres A and B. The radii of the two circles are 3 cm and 5 cm respectively. If ST : TQ = 1 : 3 and RT = 4 cm. Find the length of QT and AB.

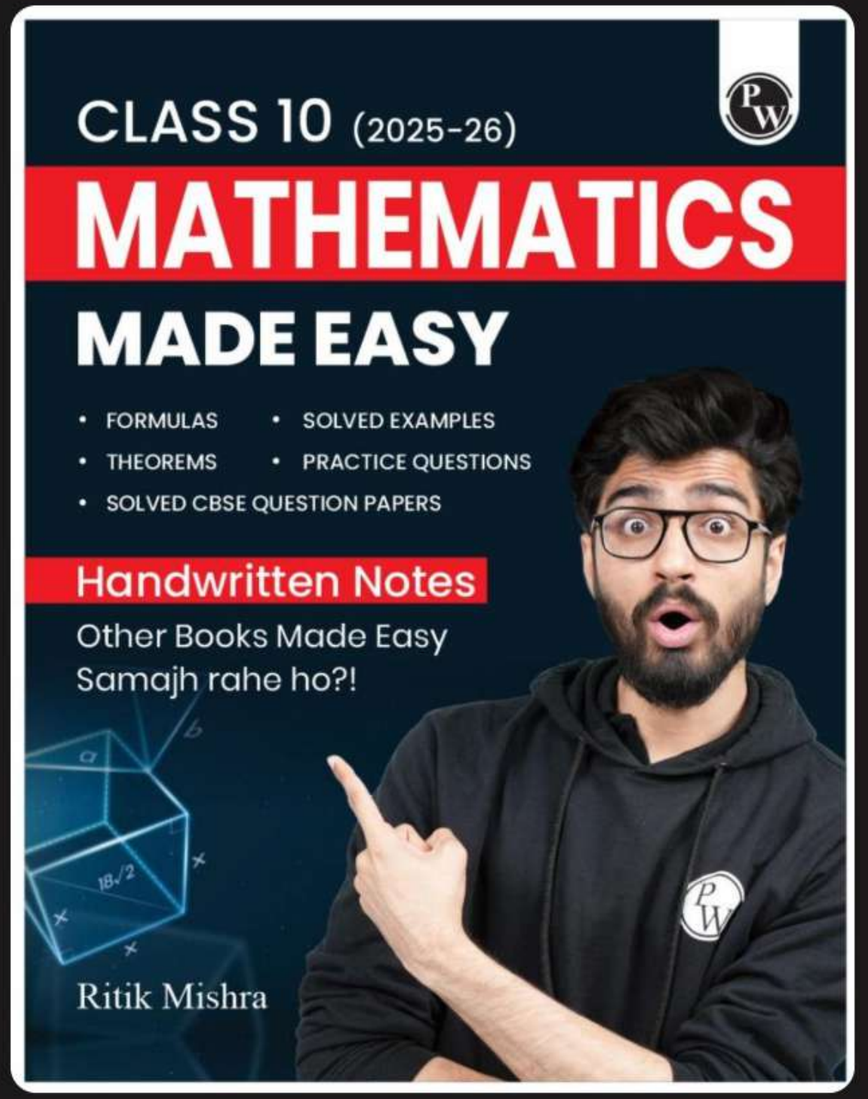
$\frac{ST}{TQ} = \frac{1}{3}$

$ST = 1x$

$TQ = 3x$

$RT = 4$





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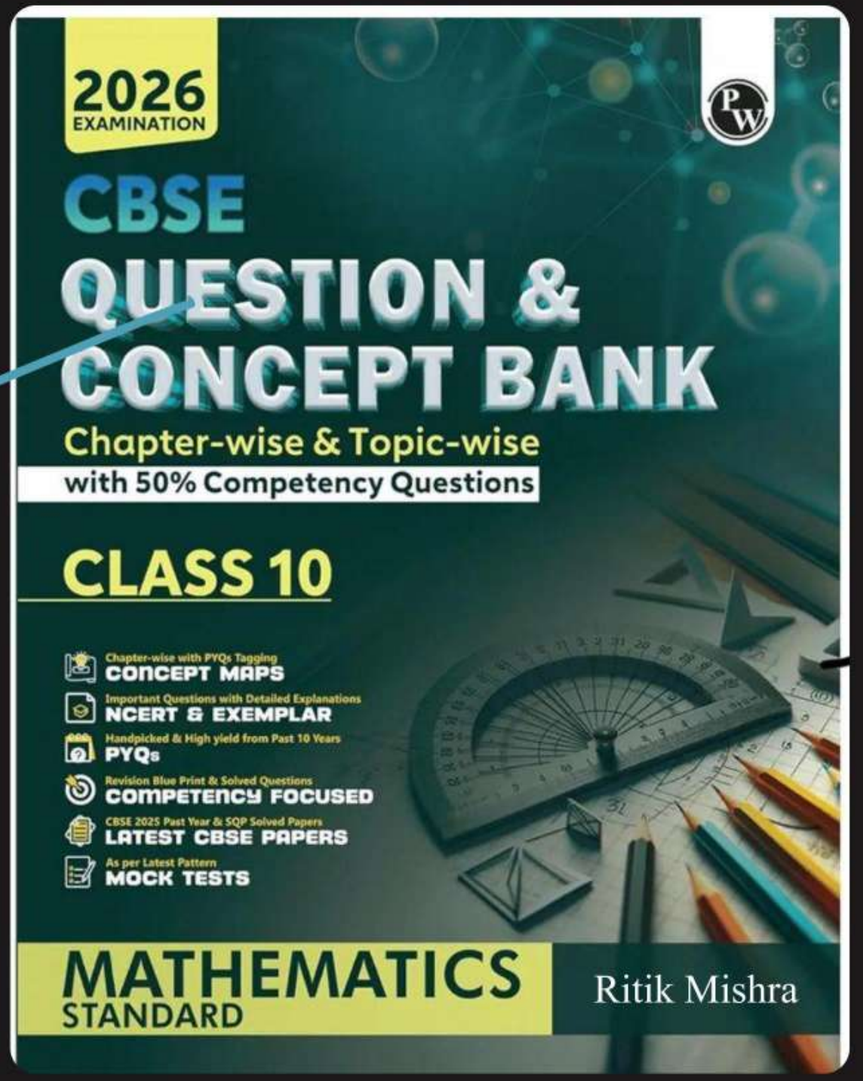


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