



**I'M UP AND DOWN,
AND ROUND & ROUND**

Lecture-2

CLASS-9TH

MATHS

Ritik Sir



Topics

to be covered



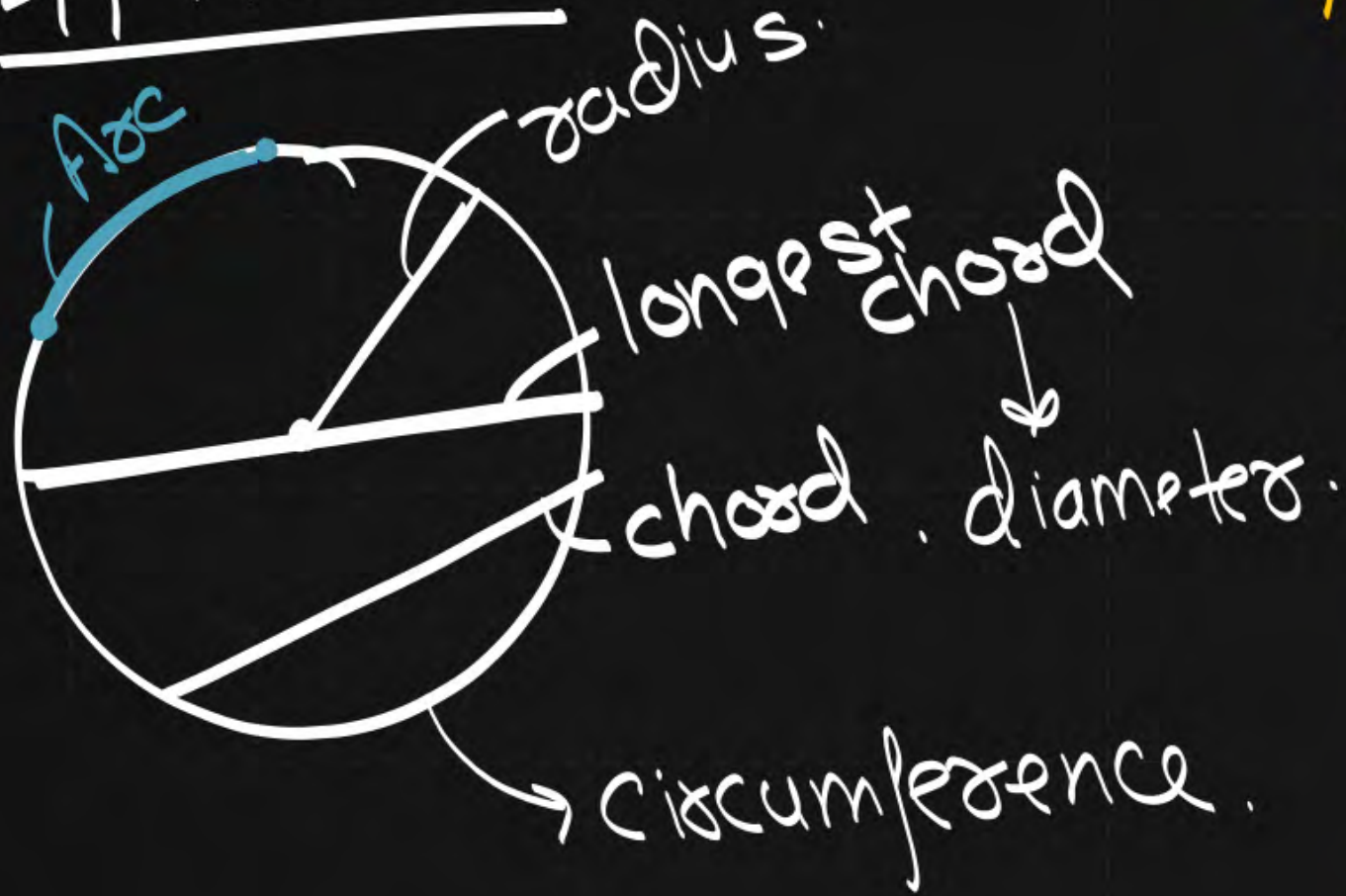
1

Circumcircle and circumcenter.

I'm Up and Down, and Round and Round

Lecture -2

Recall



distinct
2 points

Infinite many.

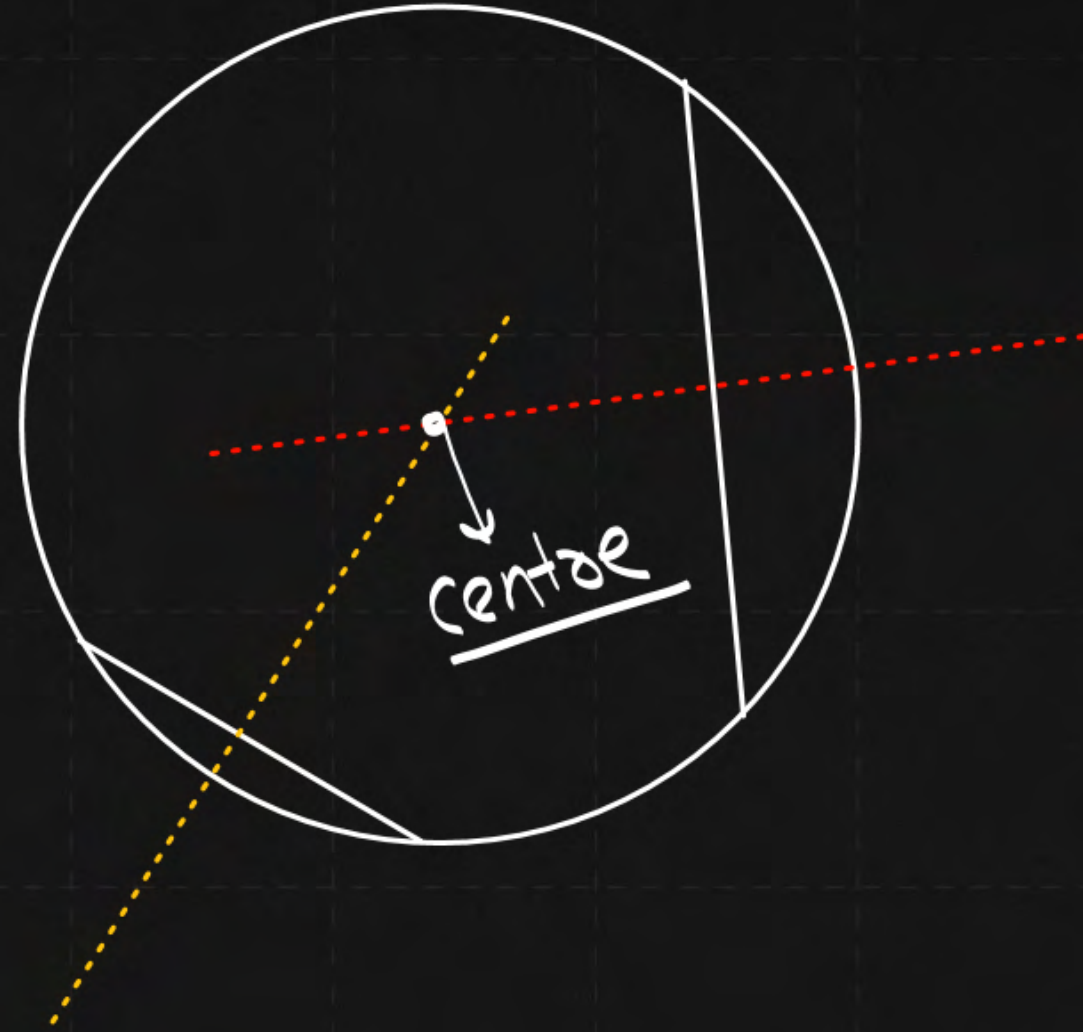
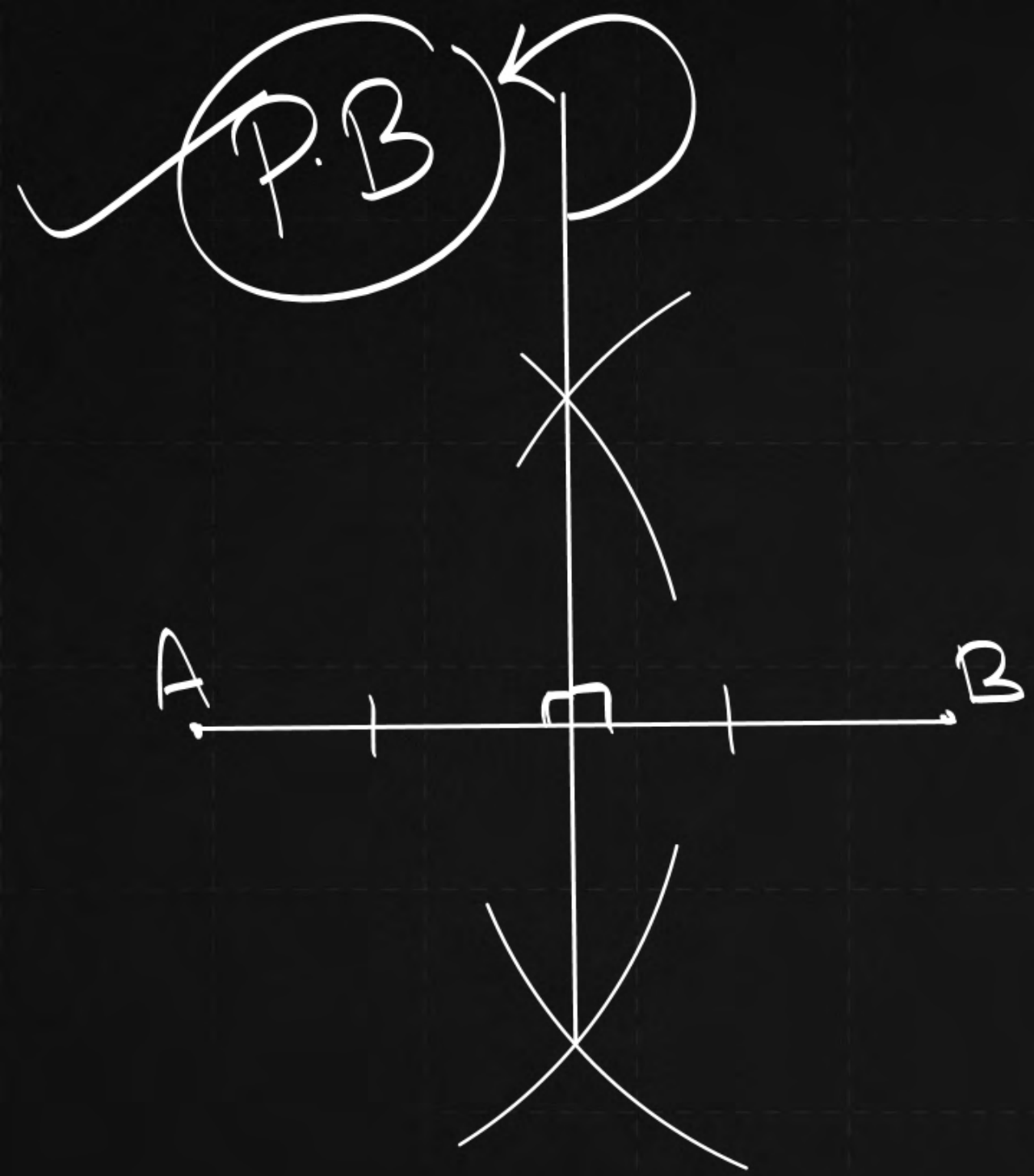
3 collinear points

0 circle.

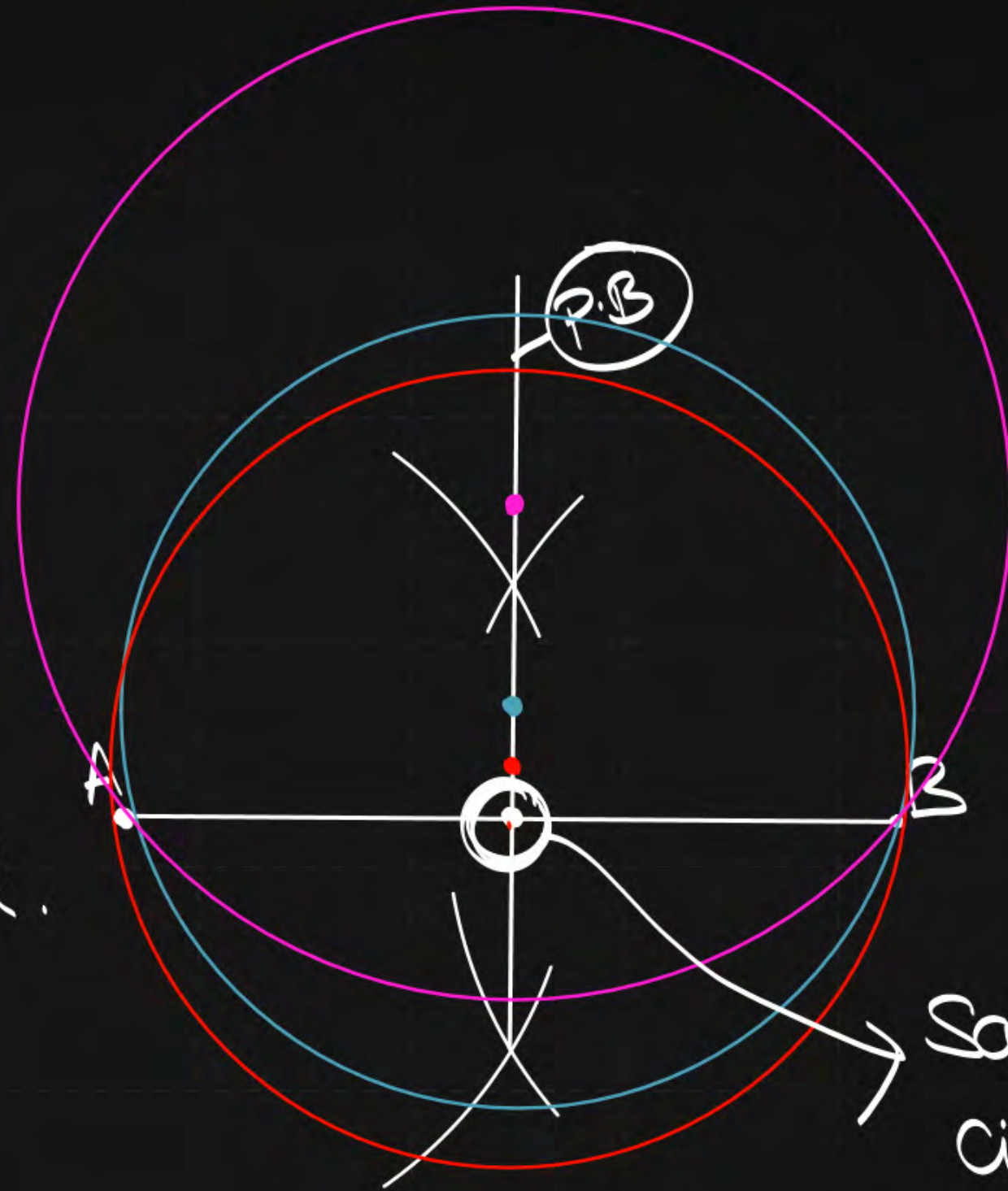
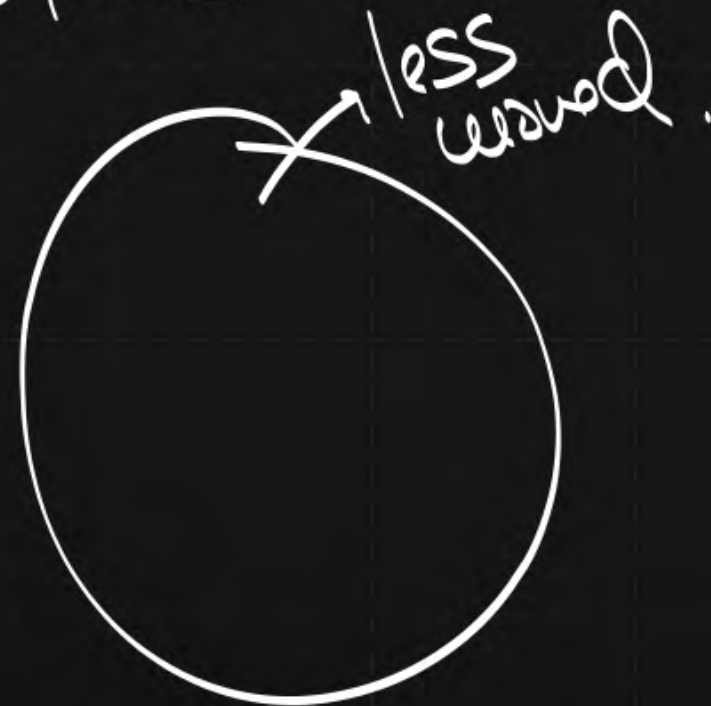
3 noncollinear

1 circle

unique circle.



All circles
passing through
A and B will
have its centre
at P.B of AB.



Sabse chote
circle ka
Centre.



QUESTIONS



Think and Reflect

1. How many circles pass through two points on a plane?
2. Are there circles of all possible radii passing through A and B? What is the radius of the smallest circle passing through A and B? What is the radius of the largest circle passing through A and B?
3. As you move away from segment AB along its perpendicular bisector, do the radii of the circles containing A and B increase or decrease?
4. As you go along the perpendicular bisector, will the circle drawn from that point through A and B appear more curved or less curved?
5. You are given two points A and B on a plane. How many squares can you draw on the same plane with A and B on the boundary? How many squares can you draw on the plane with A and B as the corners of the square?

$AB/2$

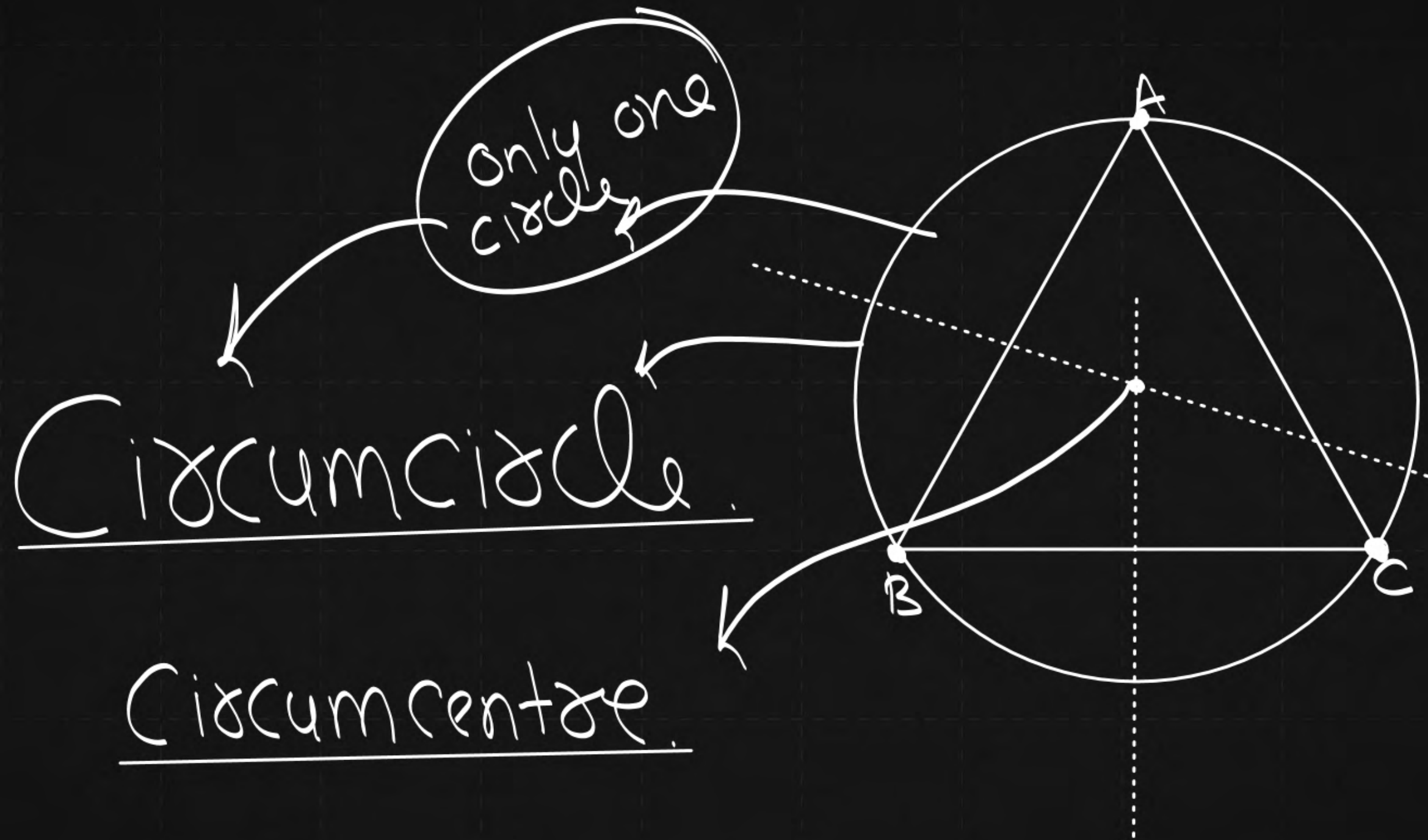
/ half of AB.

I

yes

Cannot tell / Infinitely very large

#Bad mam



KEY TERMS



Circumcircle

The unique circle passing through the three vertices of a triangle is called its circumcircle.

Circumcentre

The centre of that circumcircle is called the circumcentre of the triangle.

KEY TERMS

Circumscribe

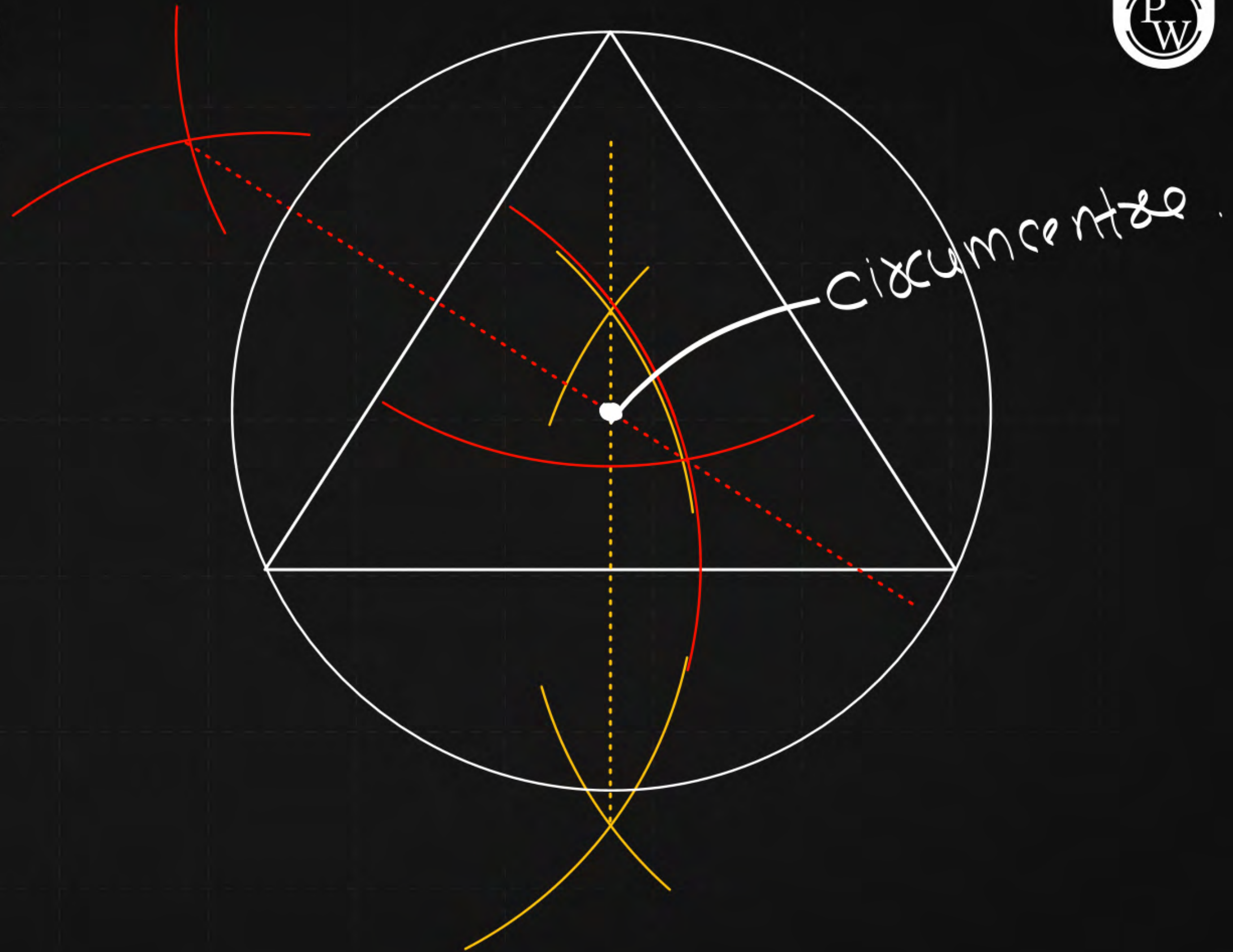
The circle circumscribes the triangle.

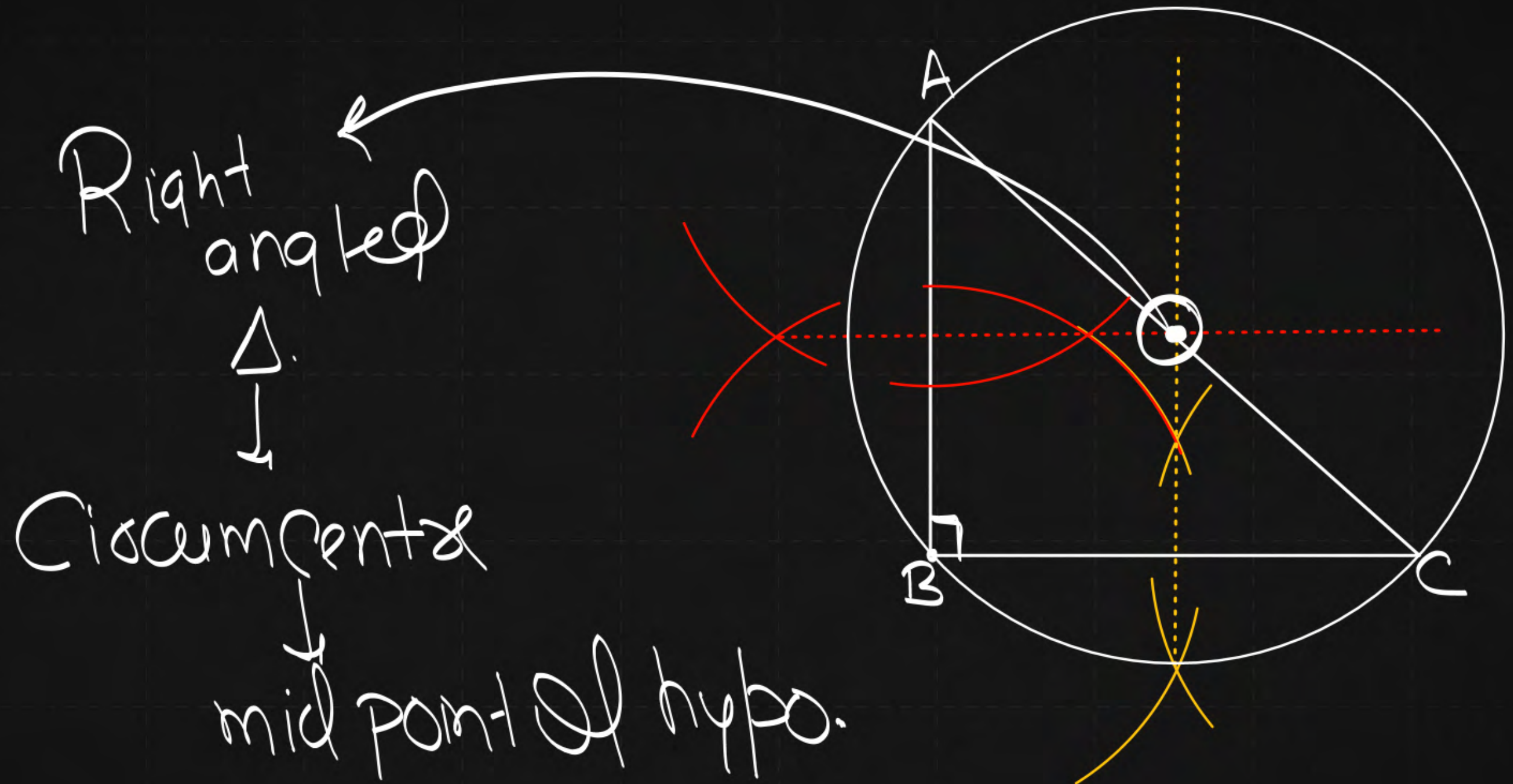


Inscribed

The triangle is inscribed in the circle.

#How to draw
a circumcircle?





LOCATION OF CIRCUMCENTRE

Acute triangle

all angles $< 90^\circ$

Circumcentre lies inside the triangle.

Obtuse triangle

one angle $> 90^\circ$

Circumcentre lies outside the triangle.

Right triangle

one angle $= 90^\circ$

Circumcentre lies at the midpoint of the hypotenuse.

QUESTIONS



Draw $\triangle ABC$ with

$AB = 5 \text{ cm}$, $\angle A = 70^\circ$, $\angle B = 60^\circ$.

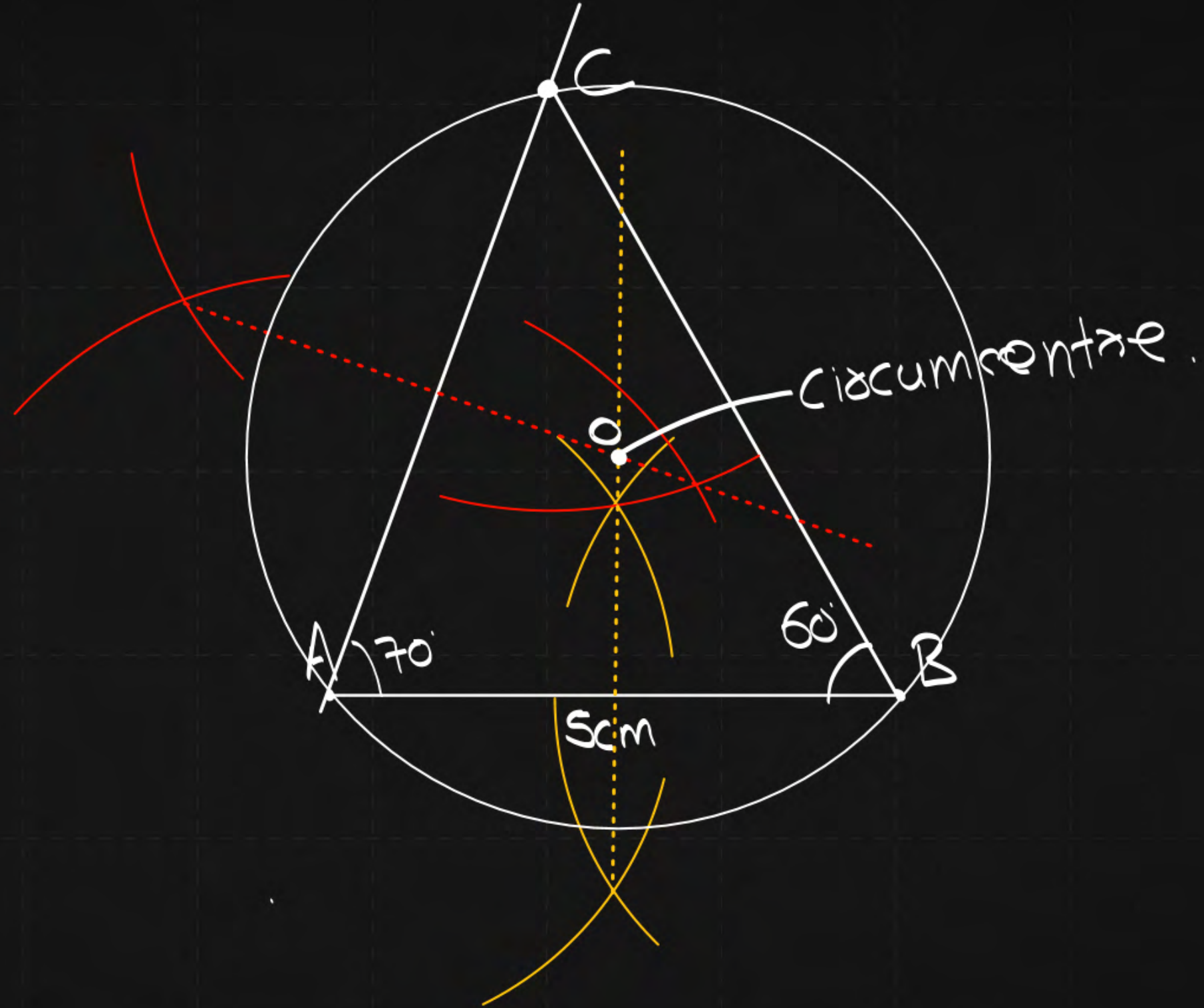
Draw its ~~circumcircle~~.

Is the centre inside or outside the triangle?



Radius
↓

OA, OB, OC



QUESTIONS

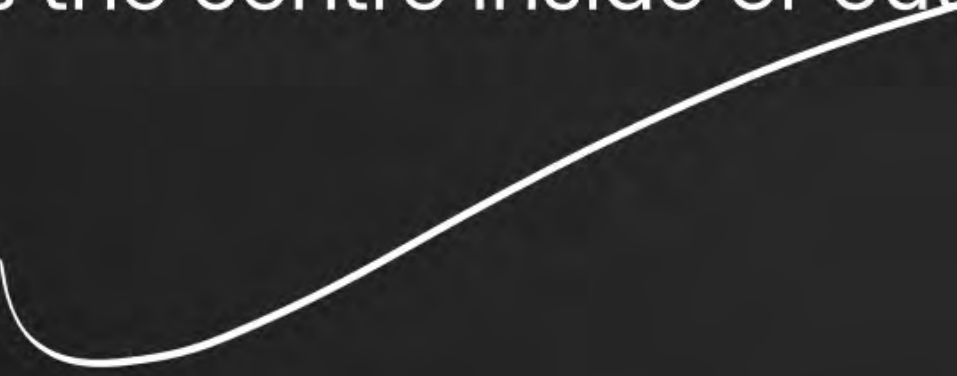


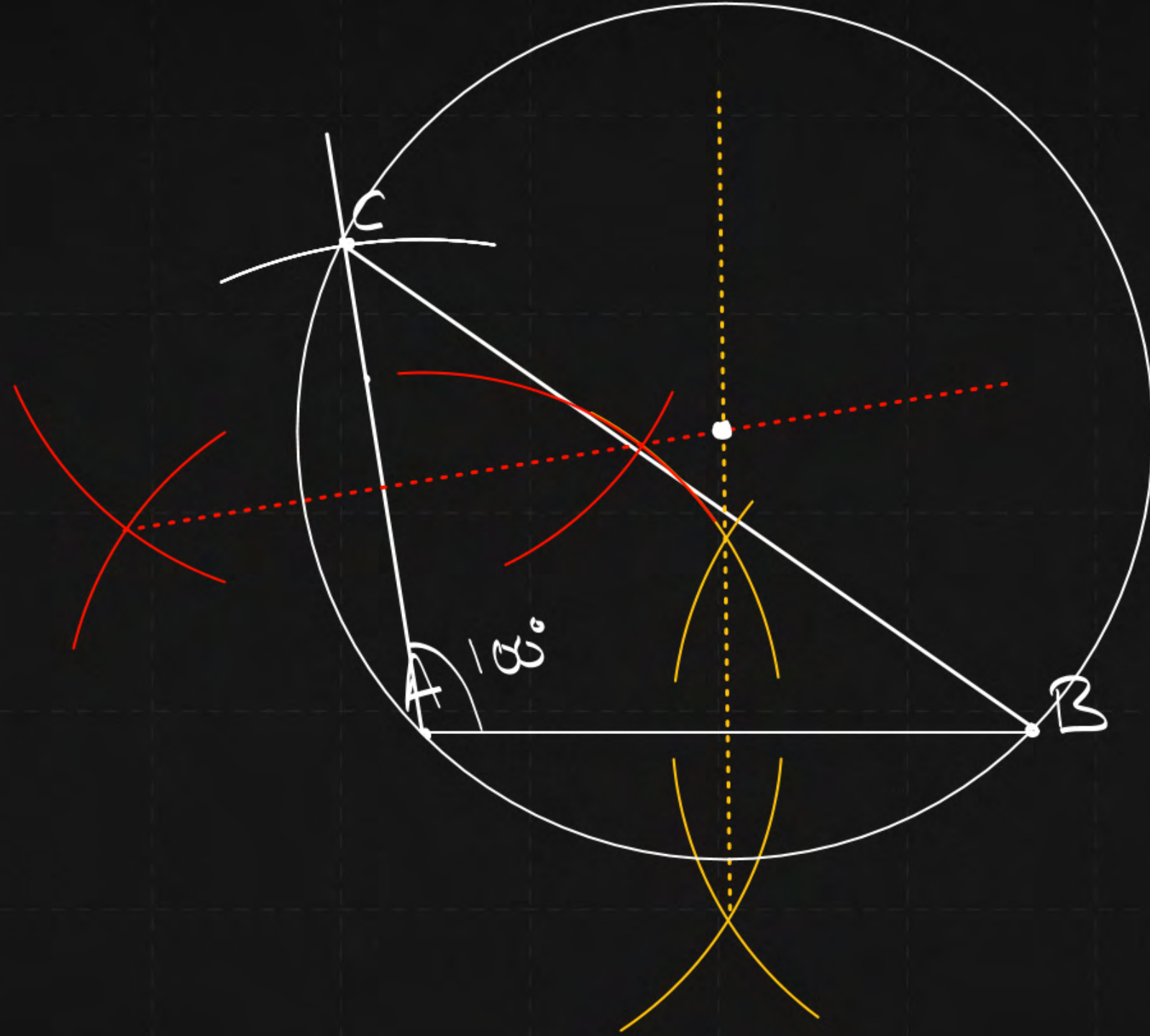
Draw $\triangle ABC$ with

$AB = 5 \text{ cm}$, $\angle A = 100^\circ$, $AC = 4 \text{ cm}$.

Draw its circumcircle.

Is the centre inside or outside the triangle?

A white curved line is drawn on the dark background, starting from the bottom left and curving upwards and to the right, ending near the word 'triangle' in the question below.



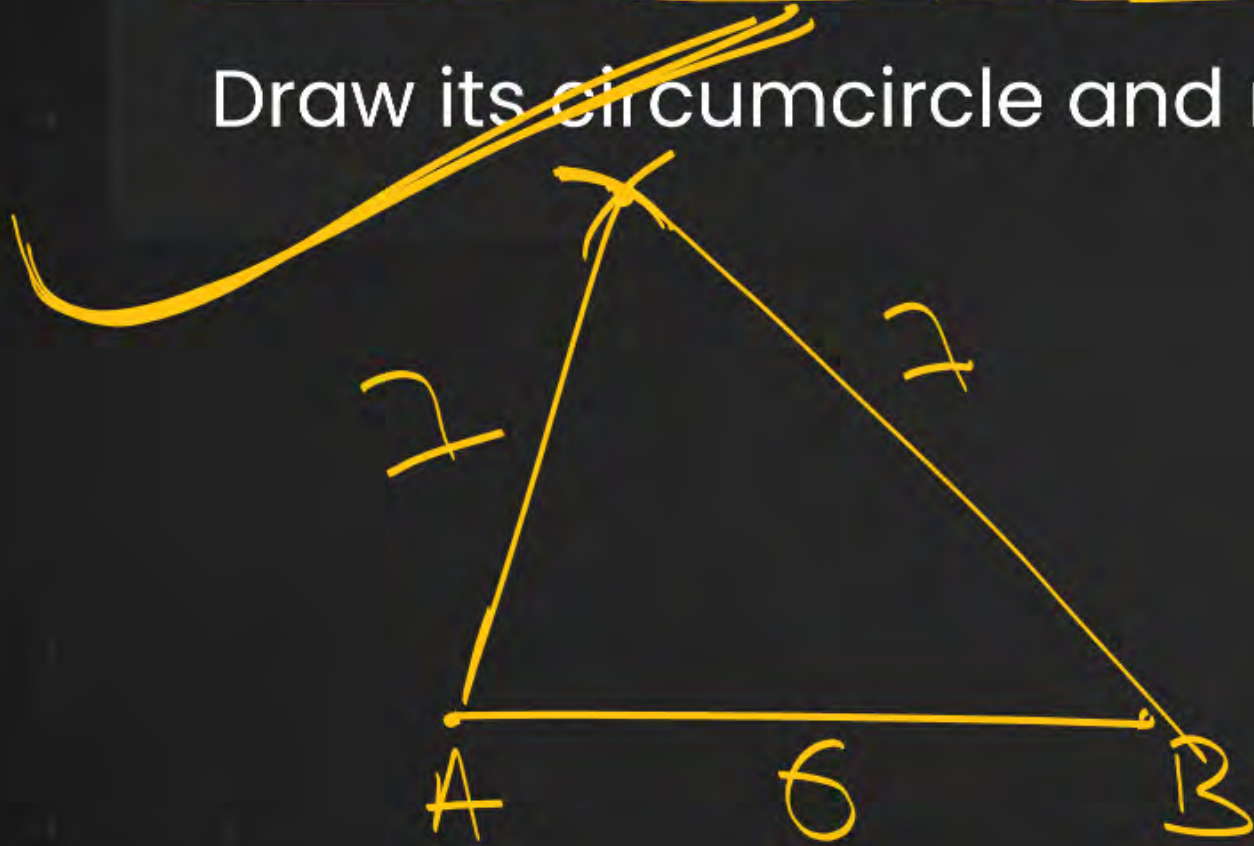
QUESTIONS



Draw $\triangle ABC$ with

$AB = 6 \text{ cm}$, $BC = 7 \text{ cm}$, $CA = 7 \text{ cm}$.

Draw its circumcircle and mark its circumcentre O.

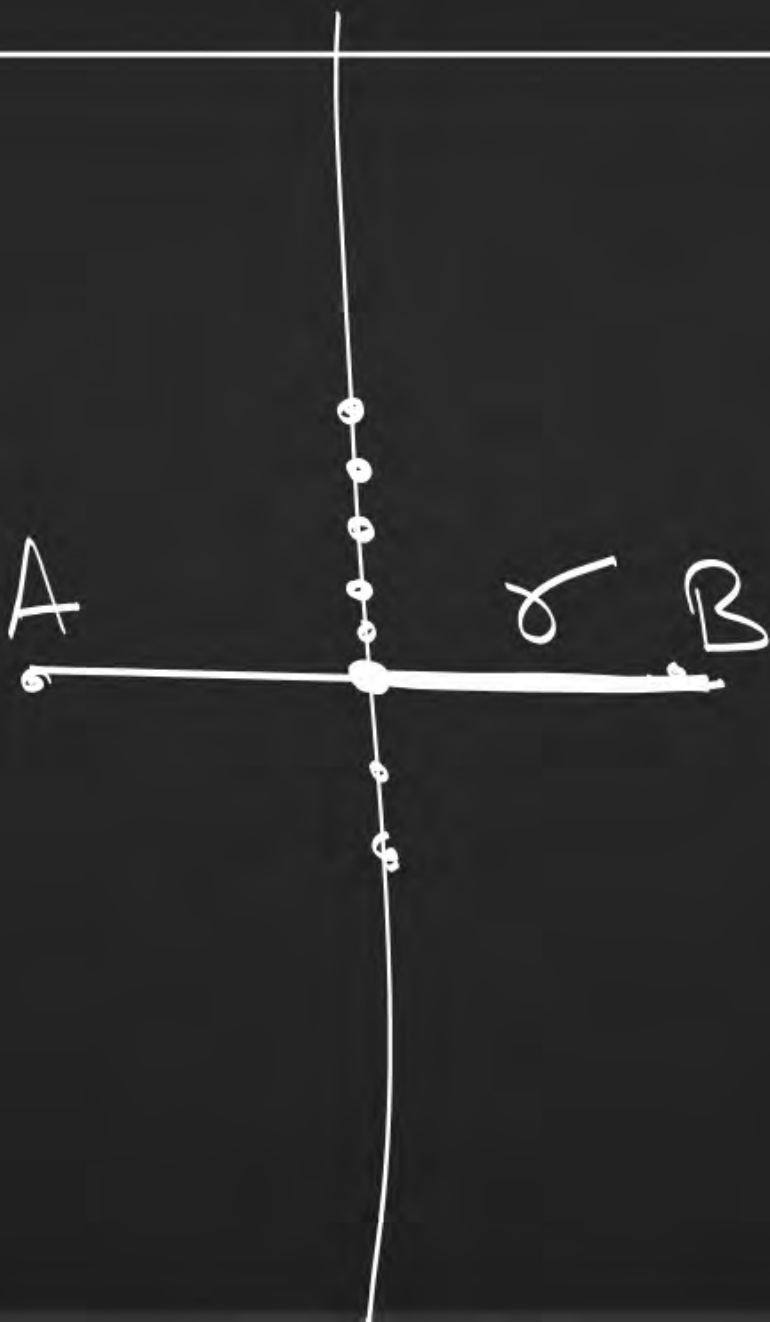


QUESTIONS

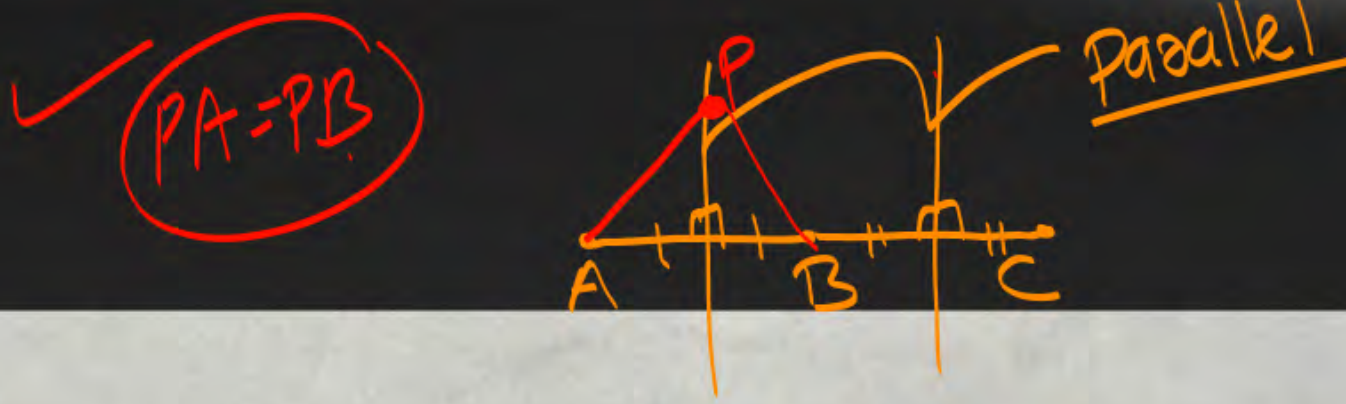


What is the least possible radius of a circle passing through two points A and B?

$$\frac{AB}{2}$$

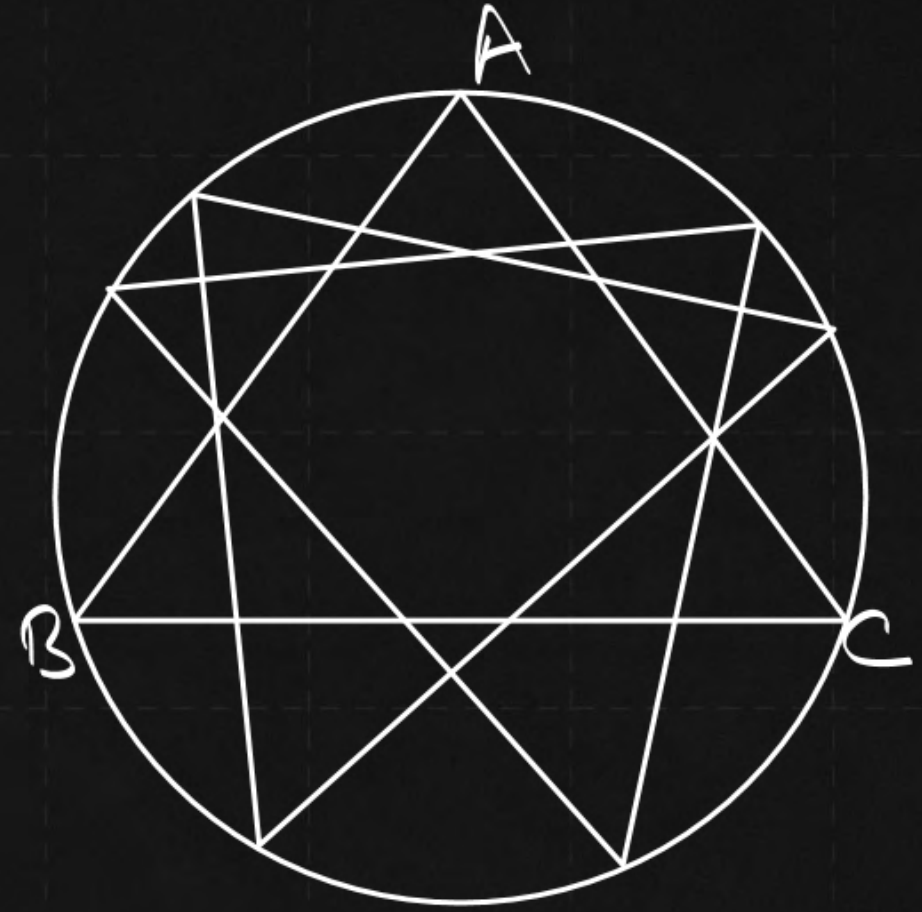


QUESTIONS



Think, Draw and Infer

1. A, B and C are three collinear points. Can you find a point P such that $PA = PB = PC$? What can you say about the perpendicular bisectors of AB and BC? Draw and check. Can you show that for three collinear points A, B and C, the perpendicular bisector of AB and BC are parallel? Is it possible for a circle to pass through collinear points? Can you draw a line that cuts a given circle in three distinct points?
2. The circumcircle of a given $\triangle ABC$ is drawn. Can there be other triangles congruent to $\triangle ABC$ that share the same circumcircle?

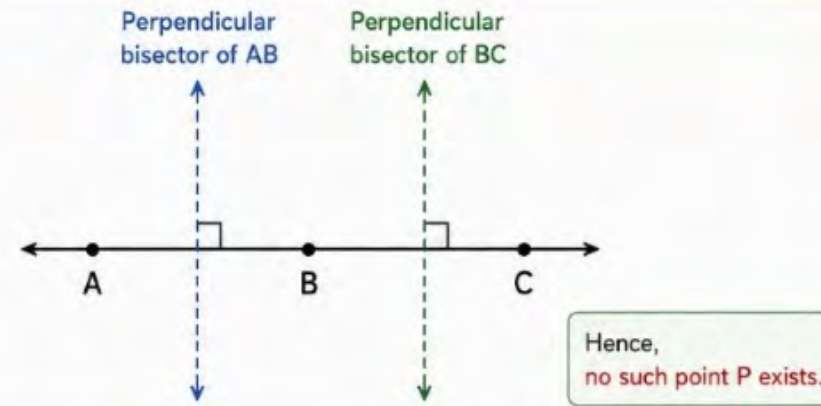


Q1. Think, Draw and Infer – Answers

1 Can you find a point P such that $PA = PB = PC$?

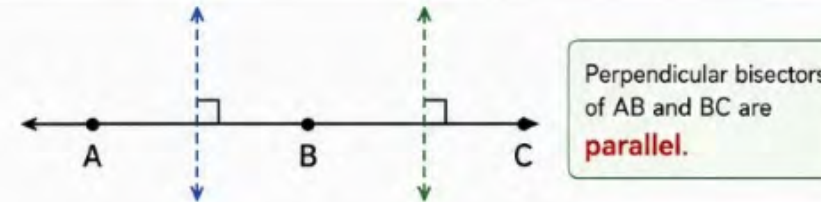
Answer: No, such a point P does not exist.

Because A , B and C are collinear, the perpendicular bisectors of AB and BC are parallel. They never meet, so there is no point P with $PA = PB = PC$.



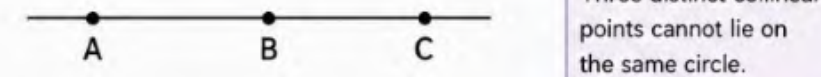
2 What can you say about the perpendicular bisectors of AB and BC ?

Answer: They are parallel.



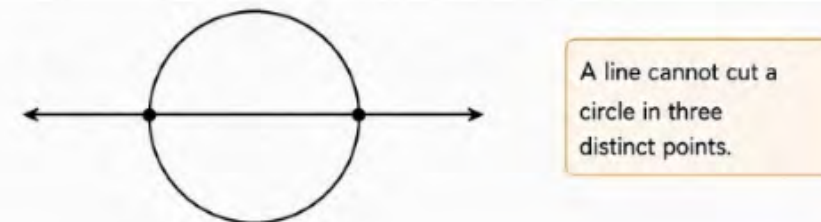
3 Can a circle pass through three collinear points?

Answer: No, a circle cannot pass through three distinct collinear points.



4 Can you draw a line that cuts a given circle in three distinct points?

Answer: No, you cannot.

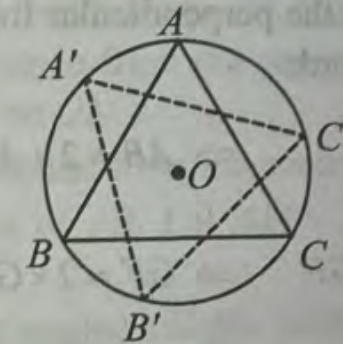


2. The circumcircle of a given $\triangle ABC$ is drawn. Can there be other triangles congruent to $\triangle ABC$ that share the same circumcircle?

Sol. Given: The circumcircle of a $\triangle ABC$.

Two triangles are congruent. So, they have the same shape and size.

That means, $\triangle ABC$ and $\triangle A'B'C'$ can share the same circumcircle. Because $\triangle A'B'C'$ can be obtained by rotating or reflecting $\triangle ABC$ on the same circle.



FILL IN THE BLANKS

1. The fixed point of a circle is called its centre.

2. A line segment joining the centre to any point on the circle is called a radius.



3. The longest chord of a circle is its diameter.

4. A chord passing through the centre is called a diameter.

FILL IN THE BLANKS



5. A part of the circumference of a circle is called an ARC.

6. The unique circle passing through the three vertices of a triangle is called its Circumcircle.

7. The centre of the circumcircle of a triangle is called its Circumcentre.

TRUE/FALSE



1. Every diameter of a circle is a chord.

T

2. Three collinear points determine a unique circle.

F

3. The circumcentre of an obtuse triangle lies outside the triangle.

T

Thank You !

- *Work Hard.*
- *Dream big.*
- *Never give up.*