

Foundation Batch



MATHS

Geometry (Circle)

LIVE 17-10-2024 07:00PM





Foundation Batch

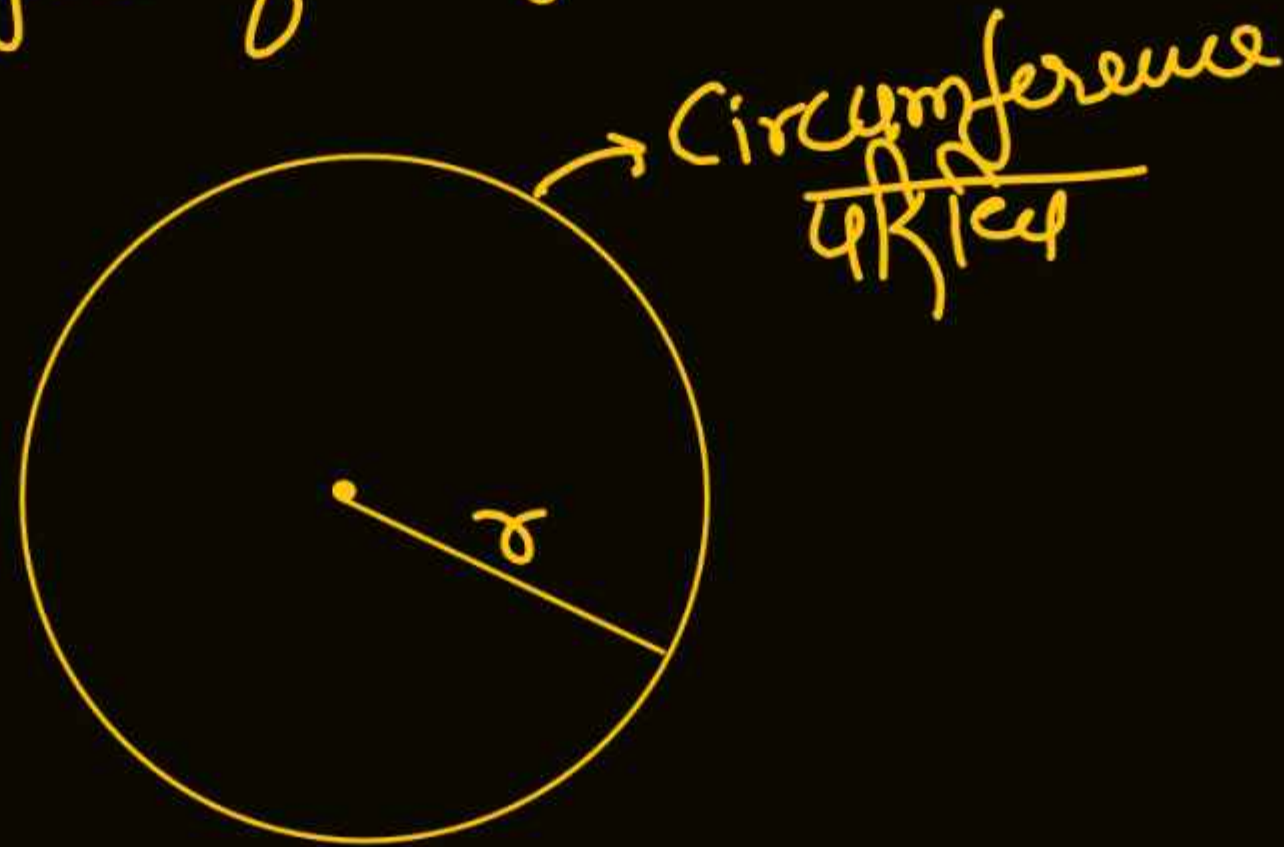
MATHS

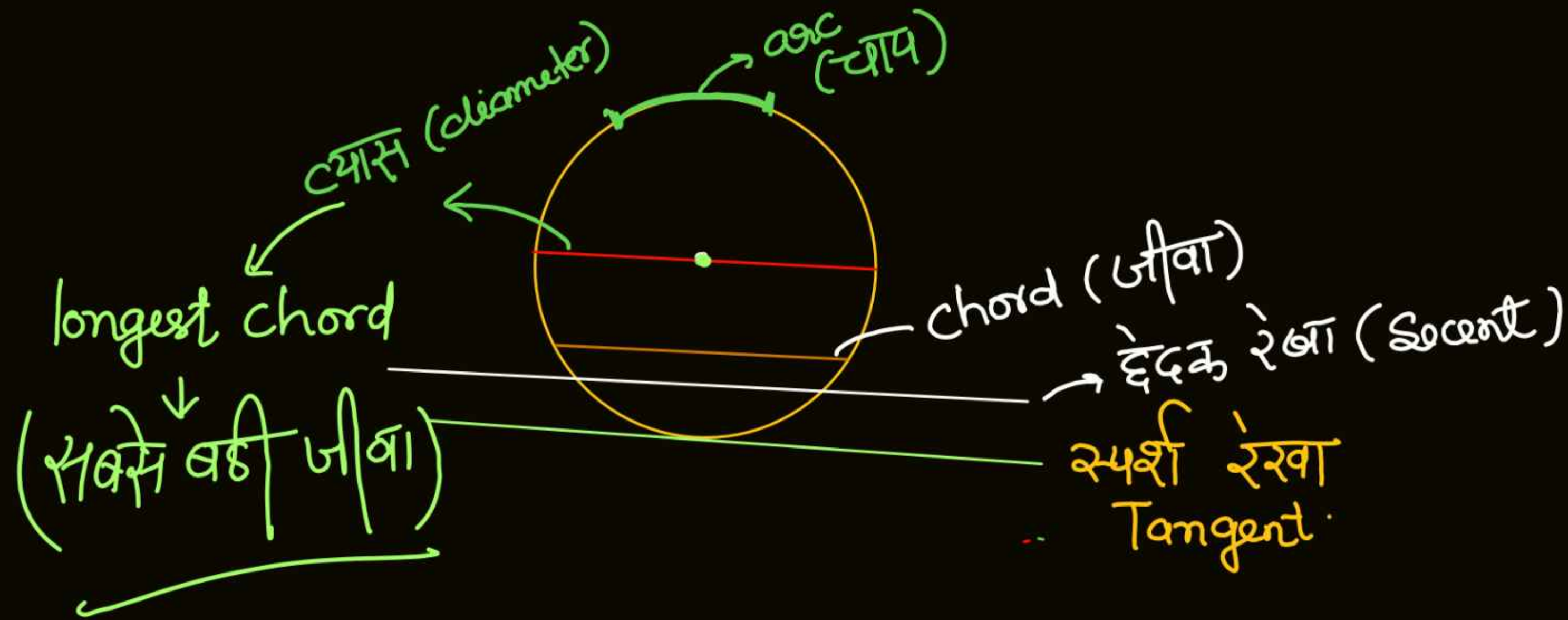


Circle

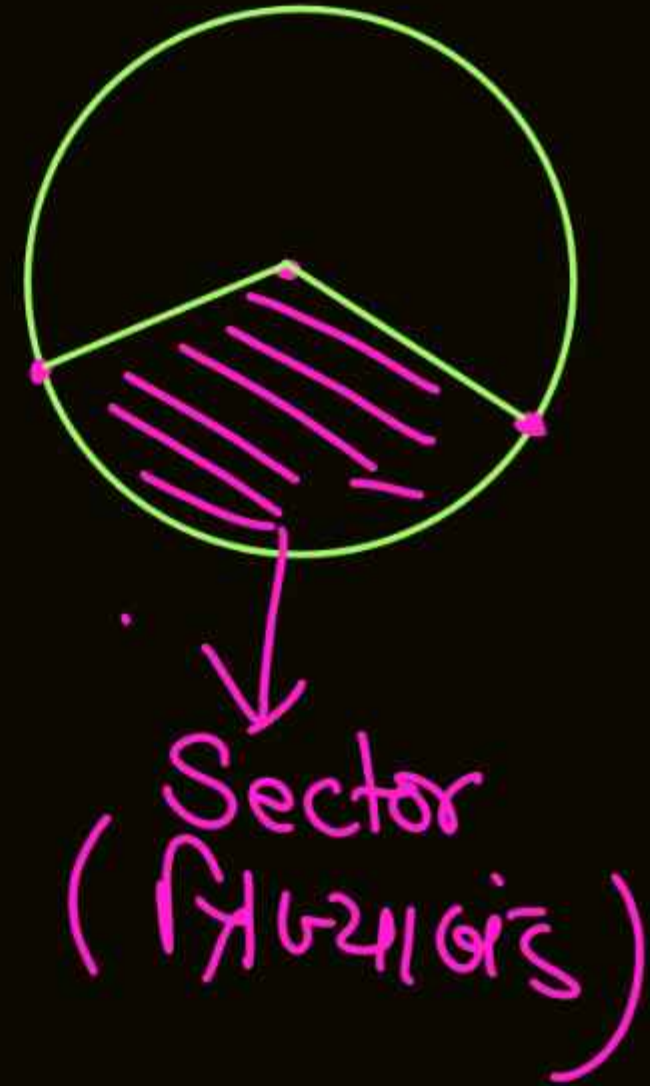
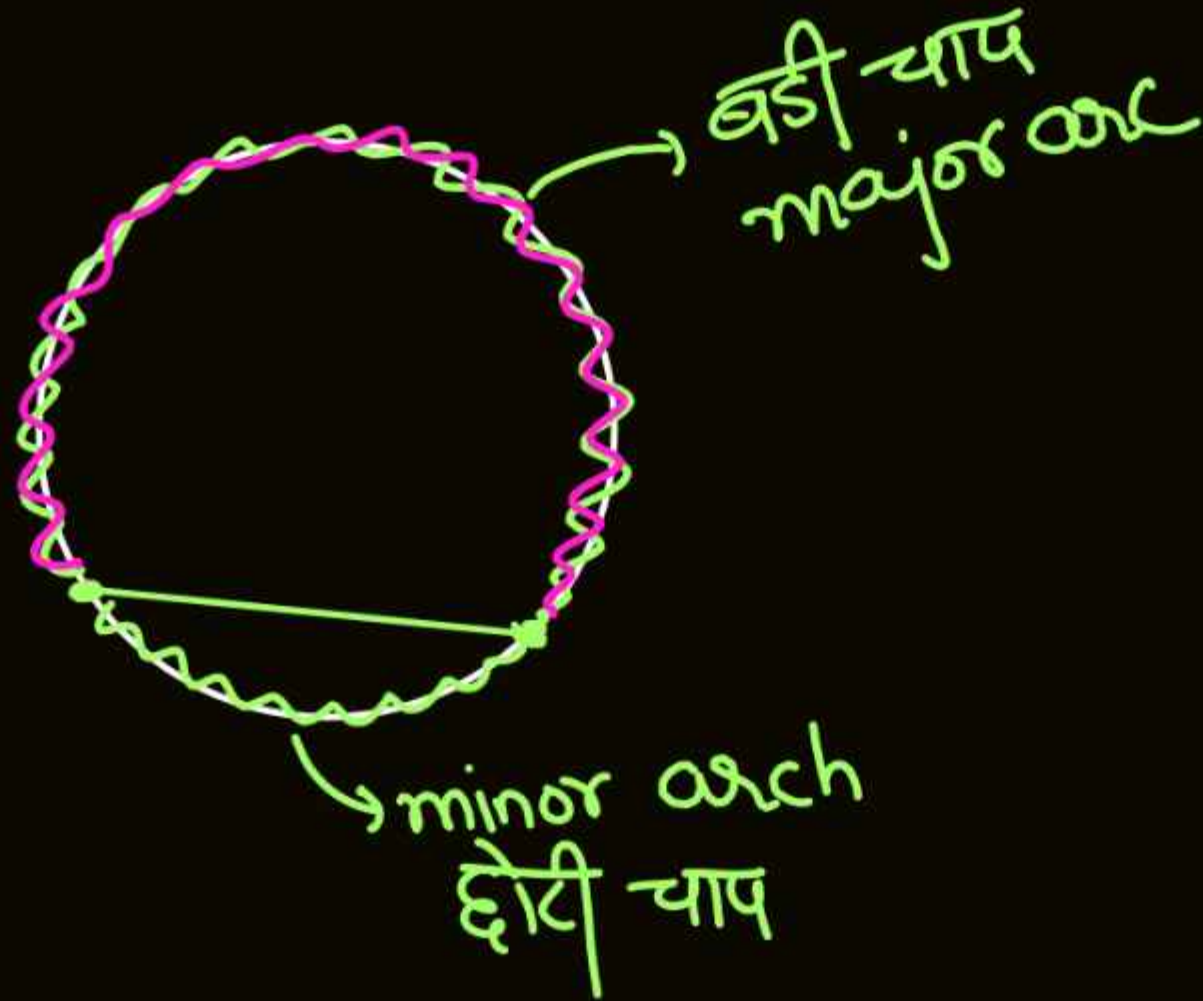
CIRCLE (वृत्त)

A polygon of infinite sides.

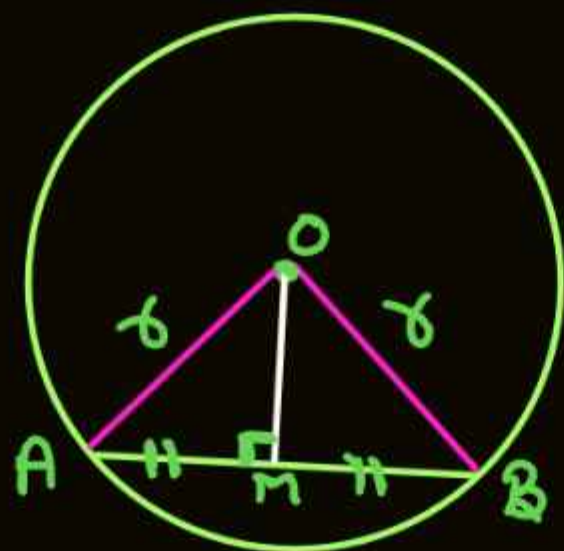




जीवा (Chord)

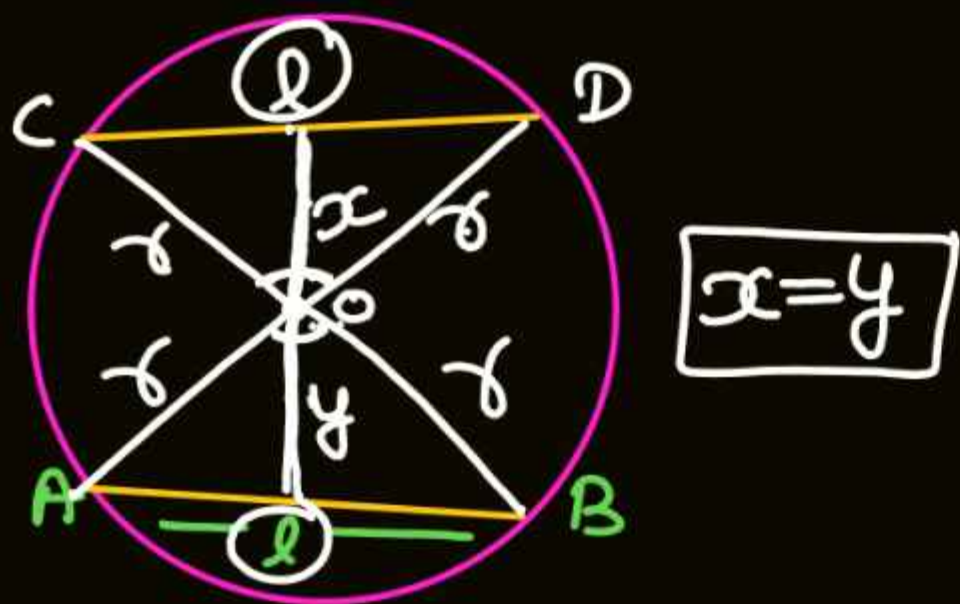


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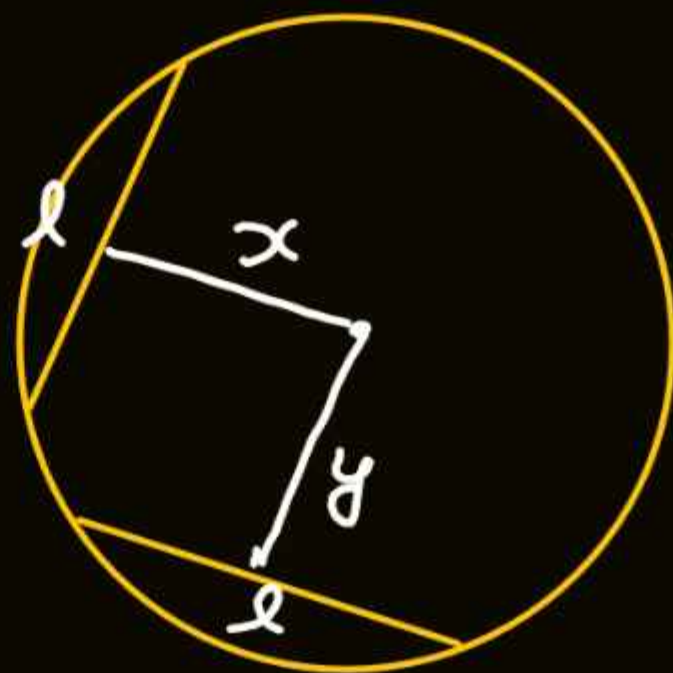
$$AM = MB$$

$\triangle OAB \rightarrow$ isosceles



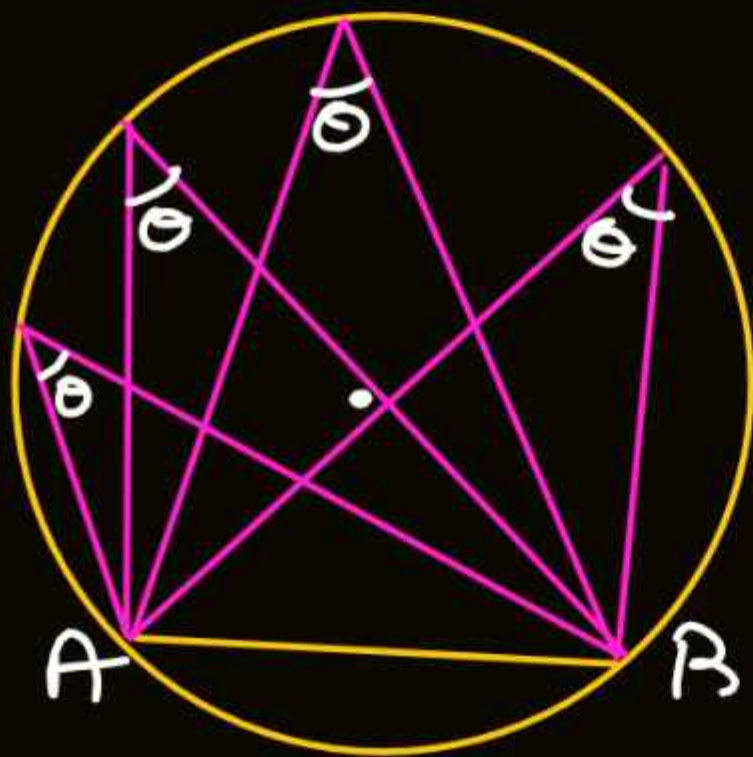
$$\triangle OCD \cong \triangle OAB$$

SAS

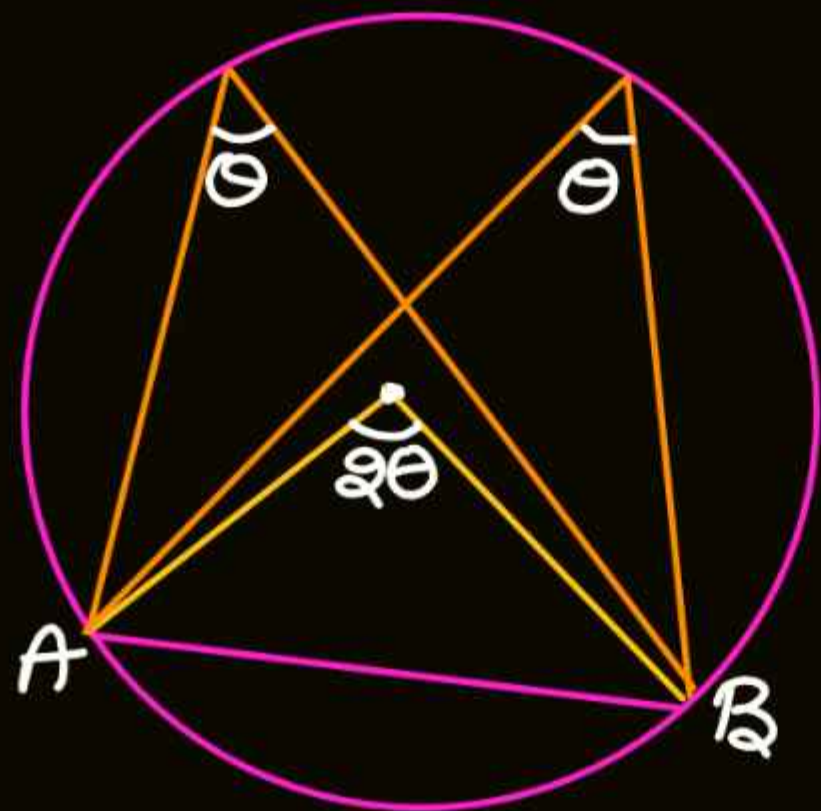


$$x=y$$

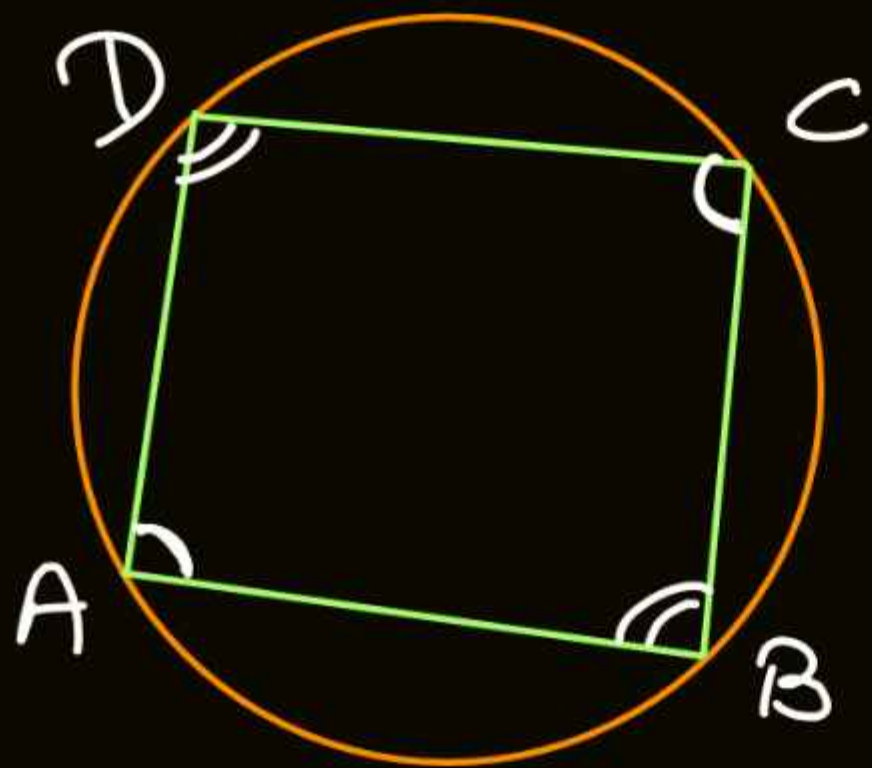
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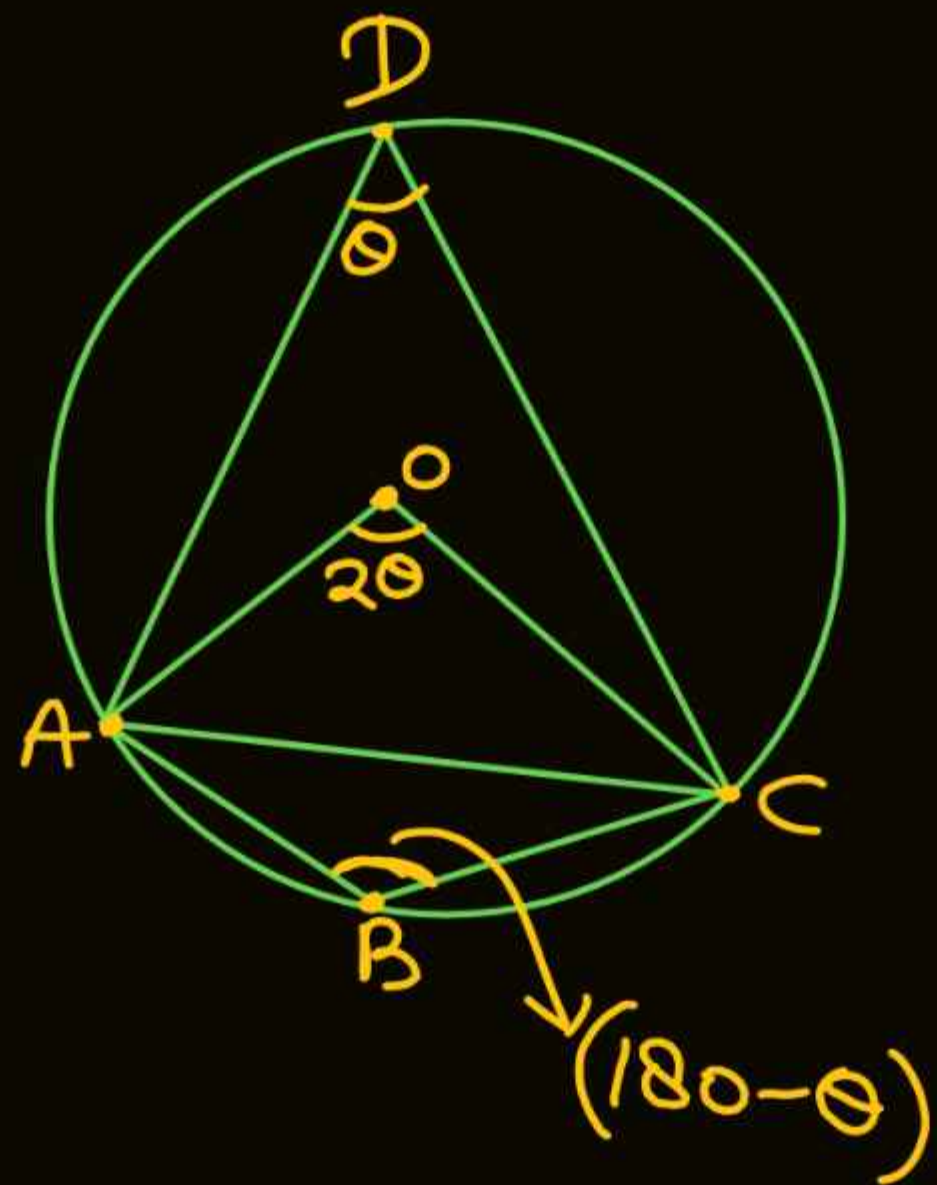


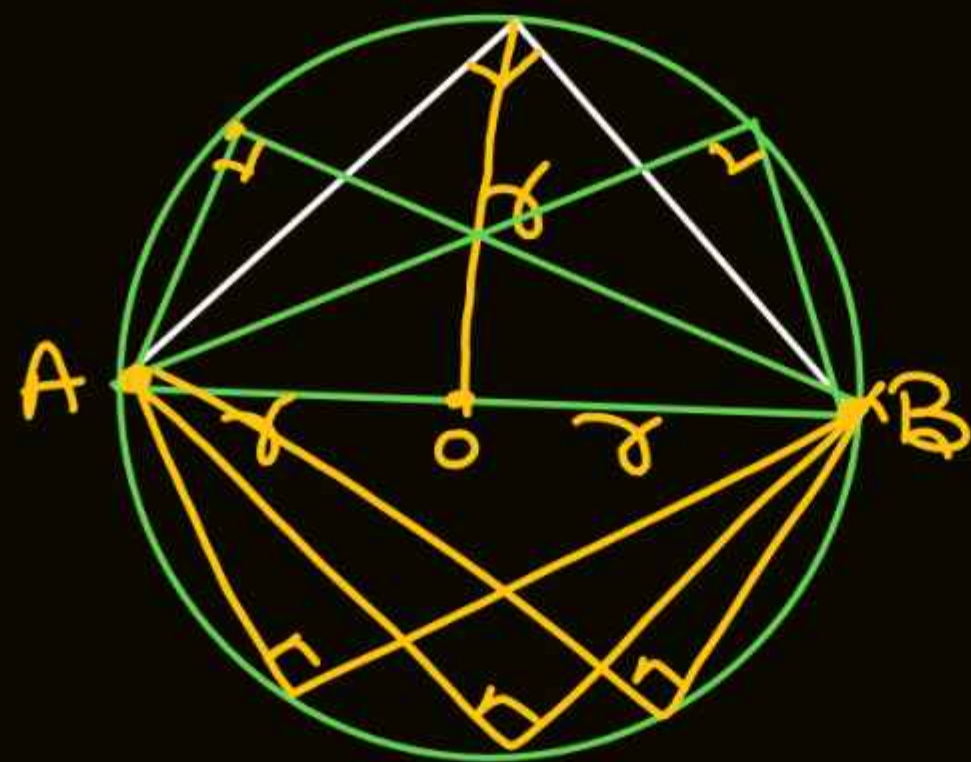
→ Sum of opposite angles
is 180°

ABCD → Cyclic Quadrilateral
(-चक्रीय चतुर्भुज)

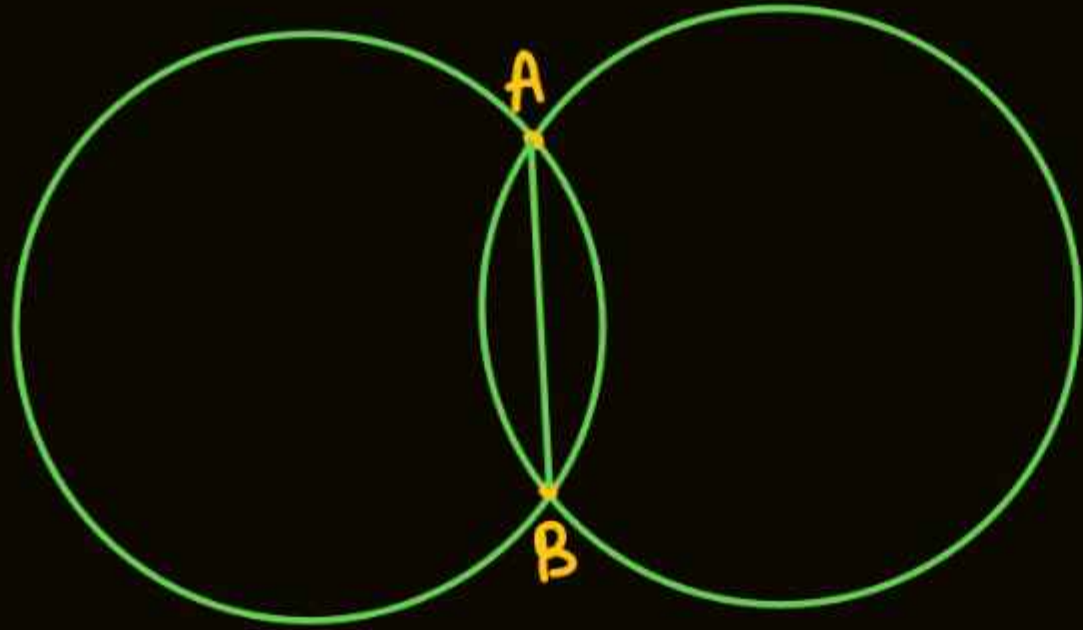
$$\angle A + \angle C = 180$$

$$\angle B + \angle D = 180^\circ$$



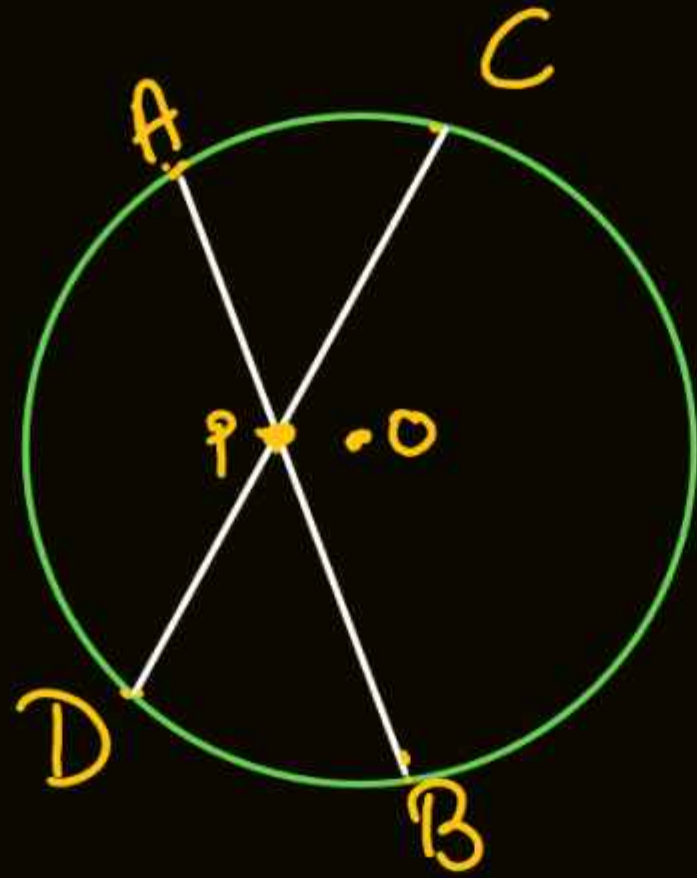


Common chord.

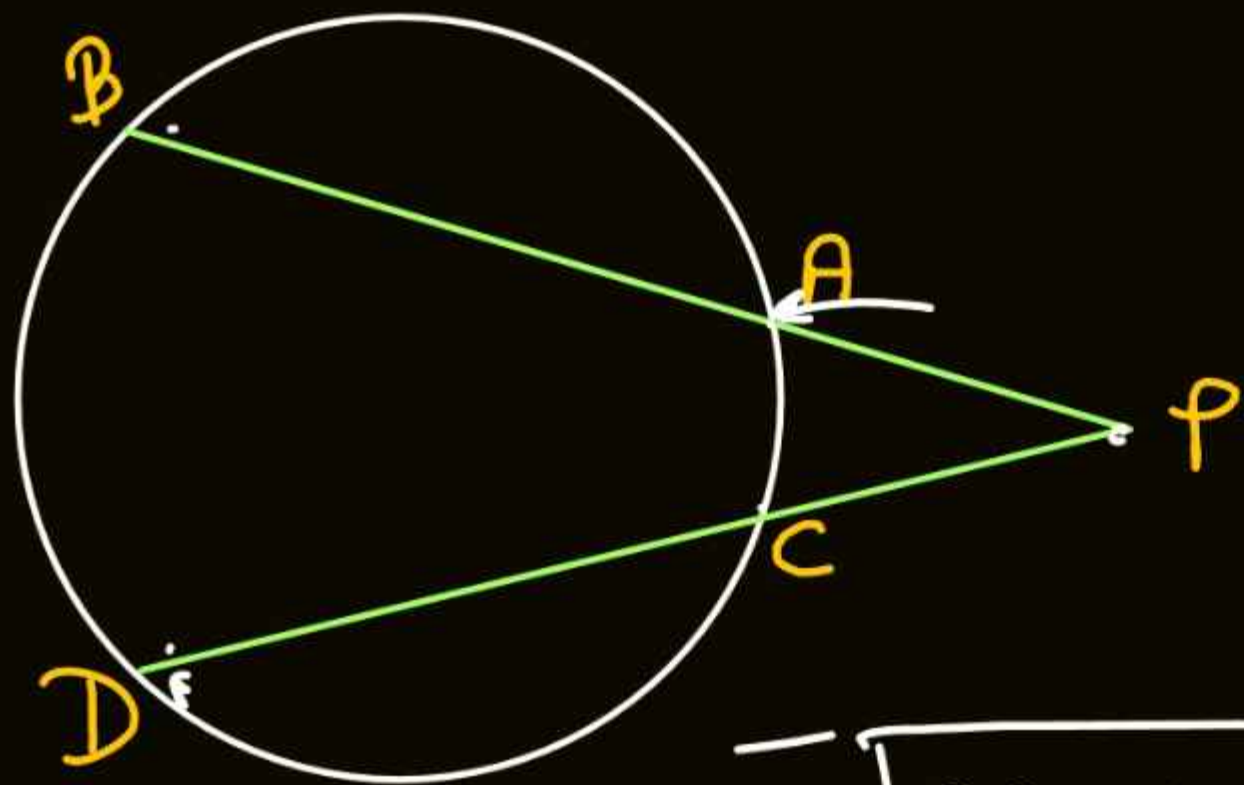


$AB \rightarrow$ common chord

m. Imp

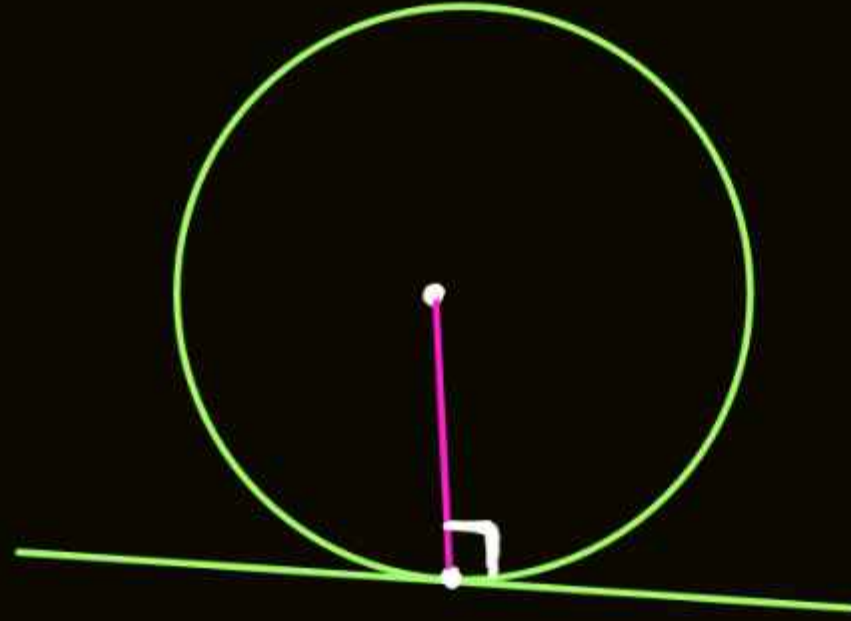


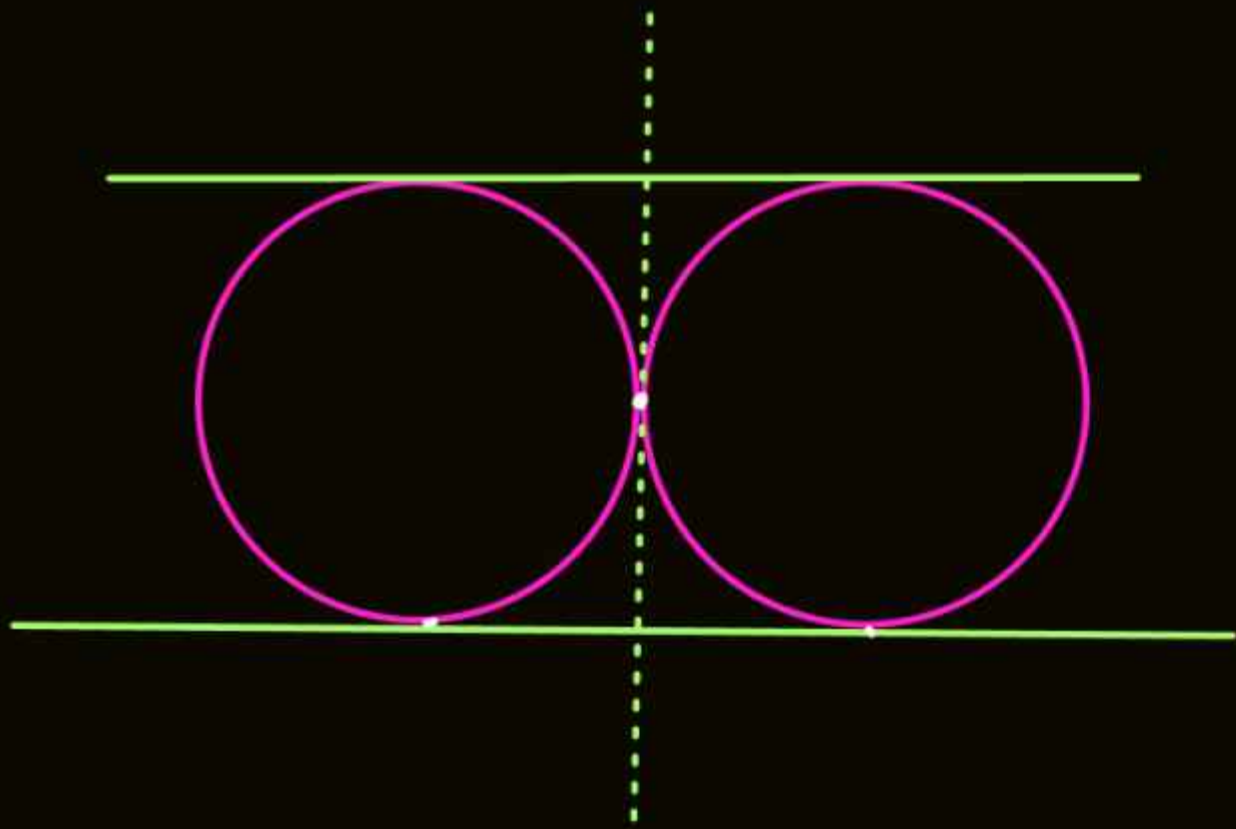
$$PA \times PB = PC \times PD$$



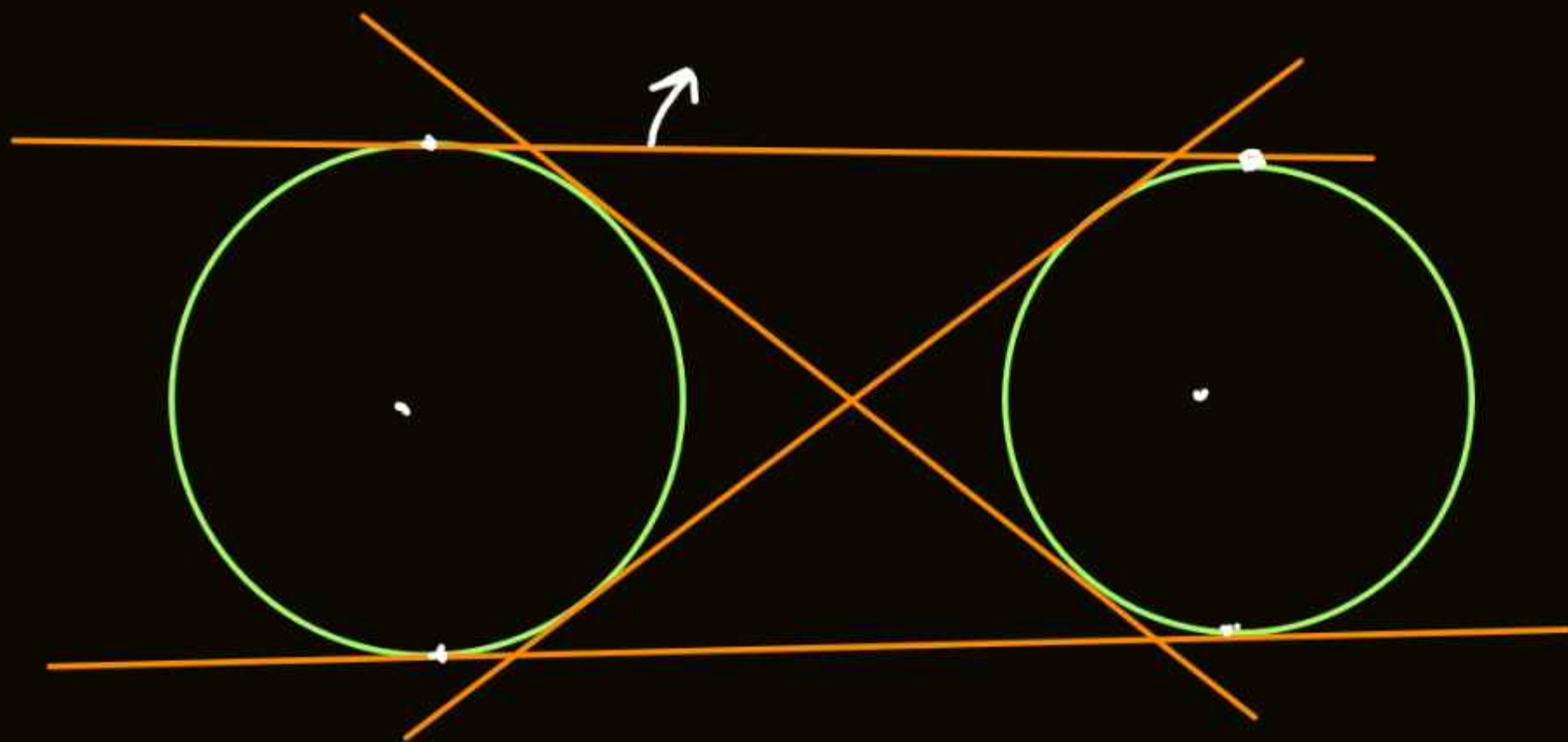
$$PA \times PB = PC \times PD$$

स्पर्श रेखा (Tangent)





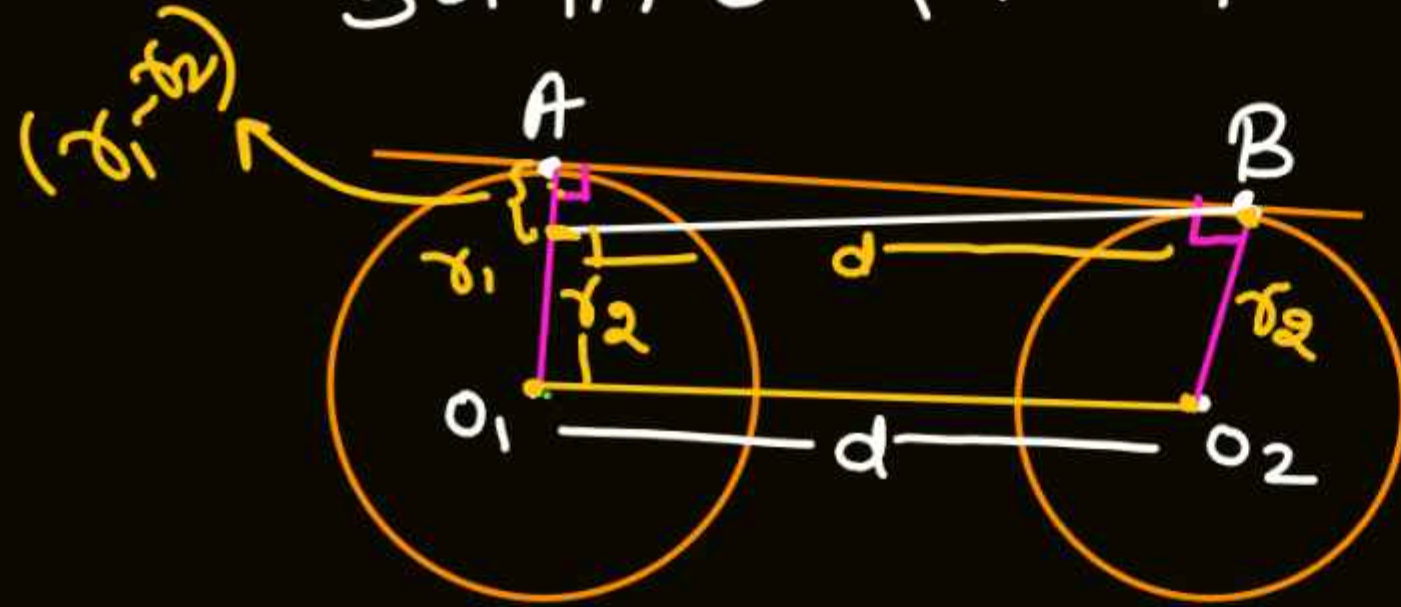
maximum $\rightarrow$ 3 common tangents.



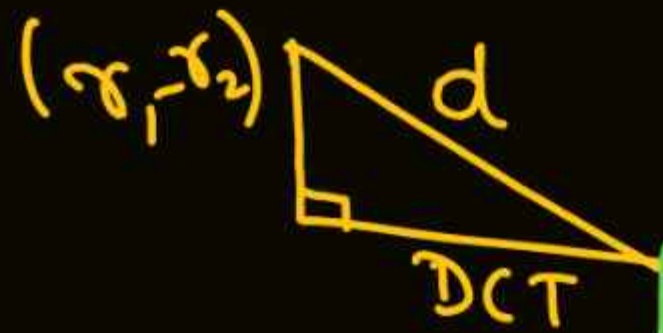
4 maximum common tangents

Direct Common Tangent (DCT)

અન્યનિષ્ઠ સ્પર્શ રેખા



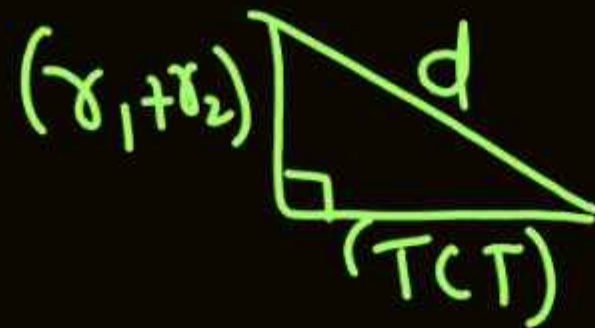
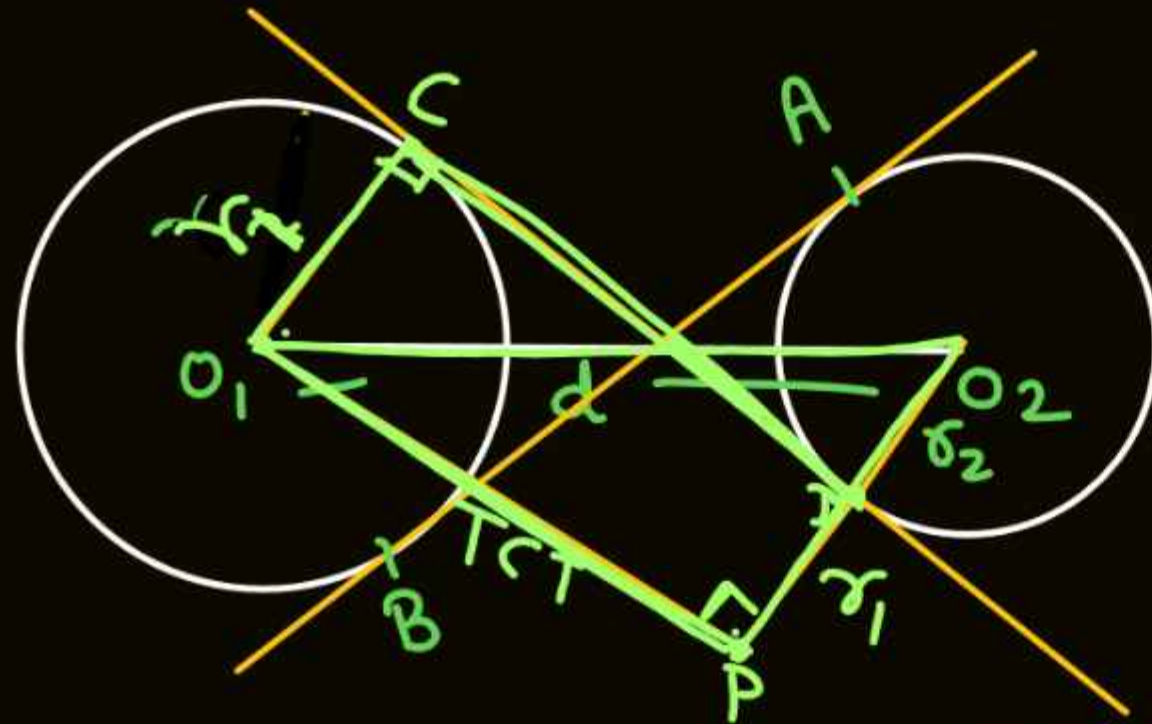
$AB \rightarrow DCT$



$$\Rightarrow d^2 = (r_1 - r_2)^2 + (DCT)^2$$

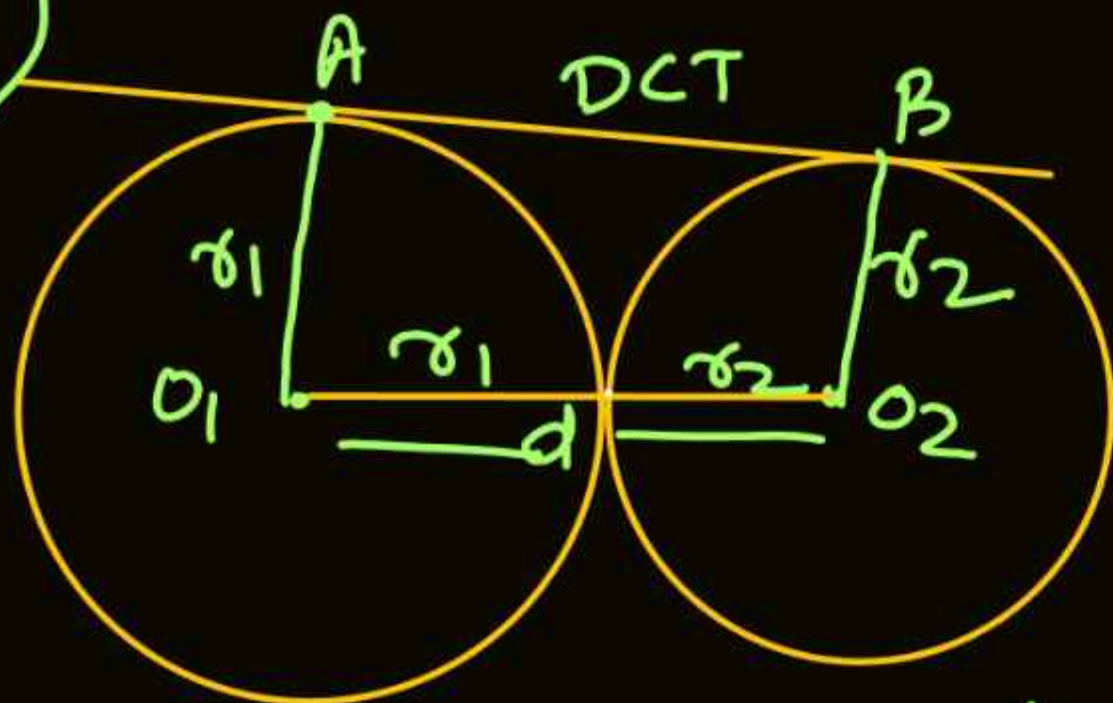
$$DCT = \sqrt{d^2 - (r_1 - r_2)^2}$$

Transverse Common Tangent (TCT) અનુપ્રત્ય સ્પર્શ રેખા



$$TCT = \sqrt{d^2 - (r_1 + r_2)^2}$$

$$(a+b)^2 - (a-b)^2 = 4ab$$



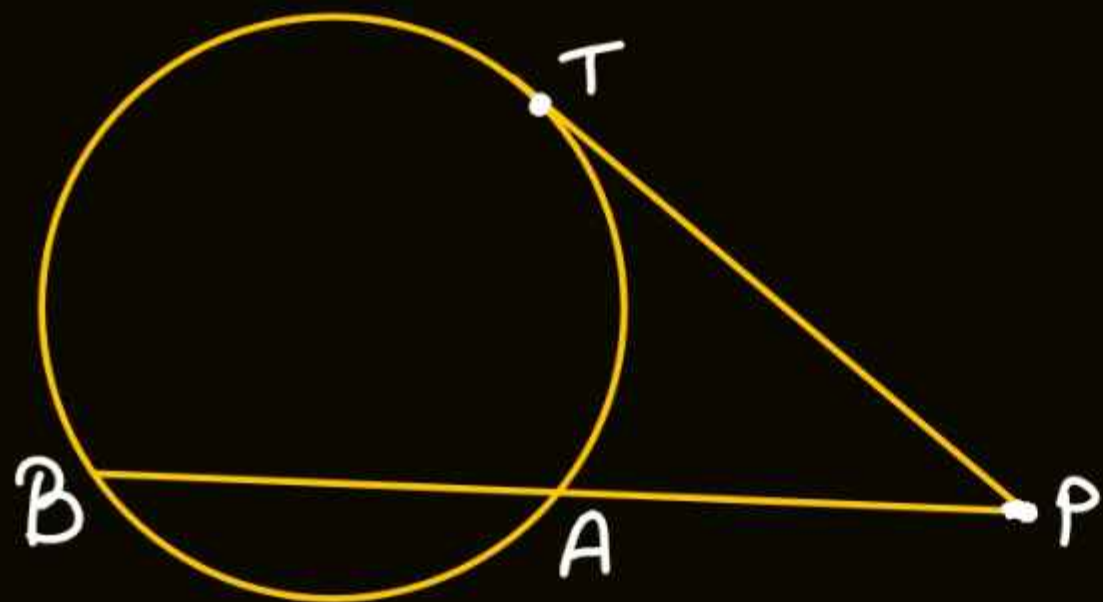
$$d = r_1 + r_2$$

$$DCT = \sqrt{d^2 - (r_1 - r_2)^2}$$

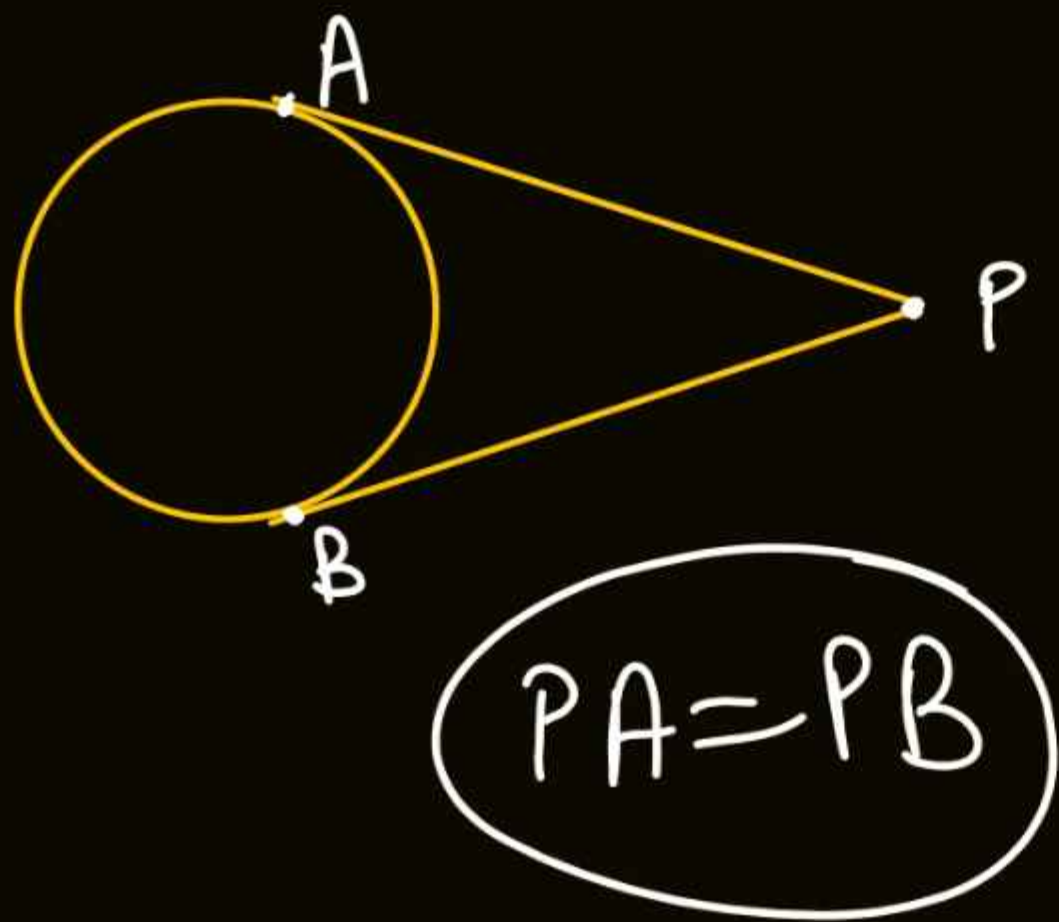
$$\frac{\sqrt{(r_1 + r_2)^2 - (r_1 - r_2)^2}}{\sqrt{4r_1r_2}}$$

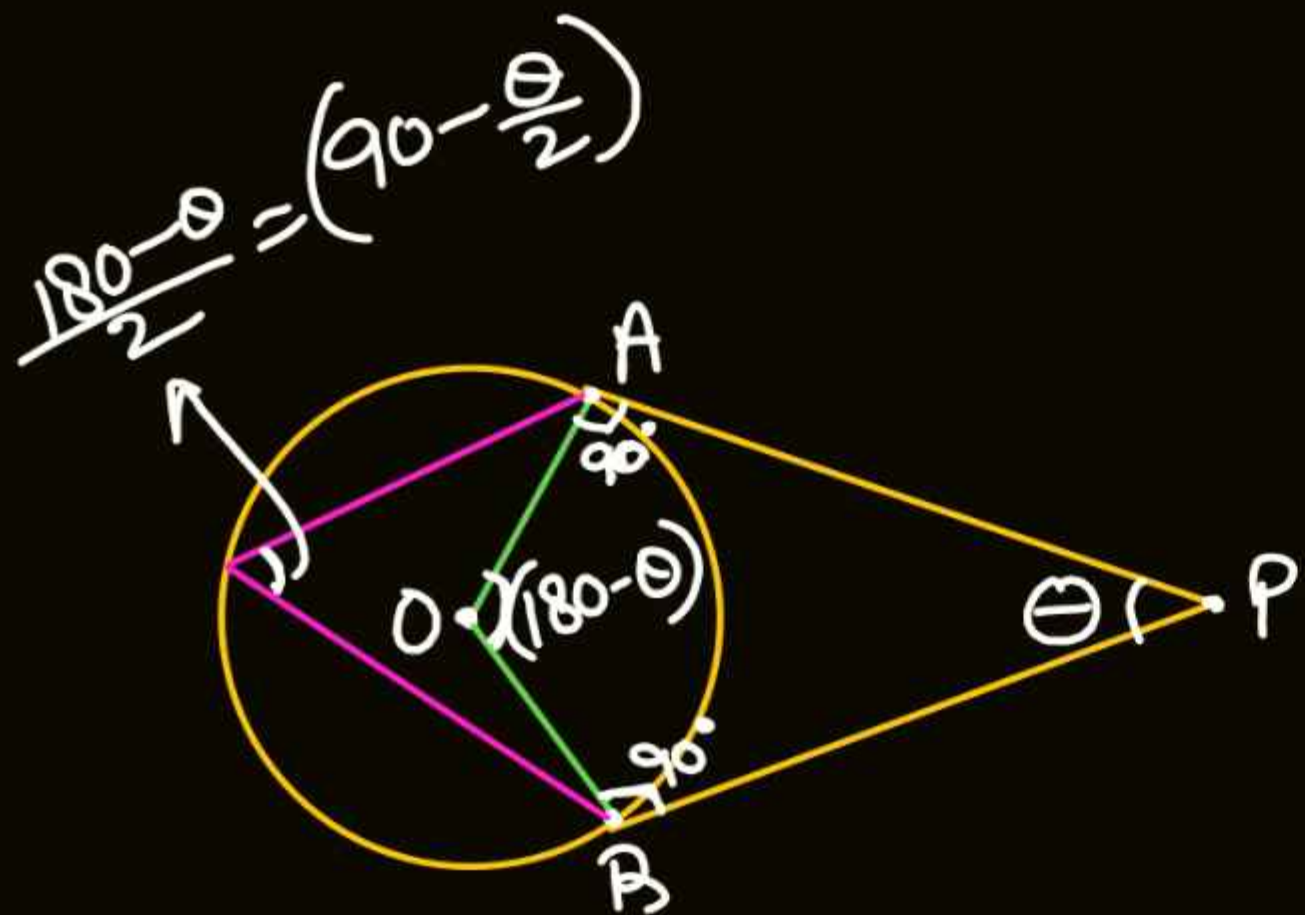
$$DCT = 2\sqrt{r_1r_2} \star$$

##



✓ $PT^2 = PA \times PB$







Q.1

1. How many circles can be drawn that pass(es) through two fixed points?

ऐसे कितने वृत्त खींचे जा सकते हैं जो दो निश्चित बिंदुओं से होकर गुजरें?

- (a) Infinite (b) Only Two
(c) One or Two (d) Only One

(SSC CGL Pre 06/12/2022)