

# NDA 1 2025

LIVE

# MATHS

## ANALYTICAL GEOMETRY 2D

CLASS 2

NAVJYOTI SIR

SSBCrack  
EXAMS

Crack  
EXAMS



## 22 Oct 2024 Live Classes Schedule

8:00AM	22 OCTOBER 2024 DAILY CURRENT AFFAIRS	RUBY MA'AM
9:00AM	22 OCTOBER 2024 DAILY DEFENCE UPDATES	DIVYANSHU SIR

### NDA 1 2025 LIVE CLASSES

11:30AM	GK - POLITY - EXECUTIVE	RUBY MA'AM
1:00PM	CHEMISTRY - ATOMIC STRUCTURE	SHIVANGI MA'AM
4:00PM	MATHS - ANALYTICAL GEOMETRY 2D - CLASS 2	NAVJYOTI SIR
5:30PM	ENGLISH - IDIOMS & PHRASES - CLASS 2	ANURADHA MA'AM

### CDS 1 2025 LIVE CLASSES

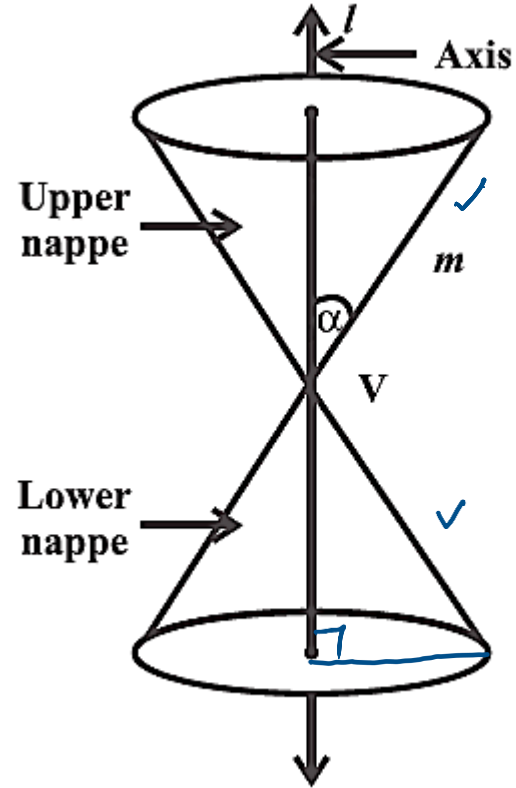
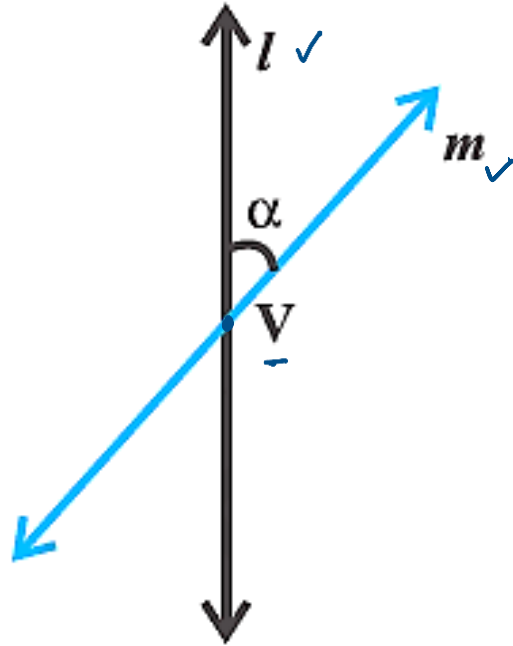
11:30AM	GK - POLITY - EXECUTIVE	RUBY MA'AM
1:00PM	CHEMISTRY - ATOMIC STRUCTURE	SHIVANGI MA'AM
5:30PM	ENGLISH - IDIOMS & PHRASES - CLASS 2	ANURADHA MA'AM
7:00PM	MATHS - NUMBER SYSTEM - CLASS 3	NAVJYOTI SIR

### AFCAT 1 2025 LIVE CLASSES

4:00PM	STATIC GK - SCIENTIFIC INVENTIONS	DIVYANSHU SIR
5:30PM	ENGLISH - IDIOMS & PHRASES - CLASS 2	ANURADHA MA'AM
7:00PM	MATHS - NUMBER SYSTEM - CLASS 3	NAVJYOTI SIR

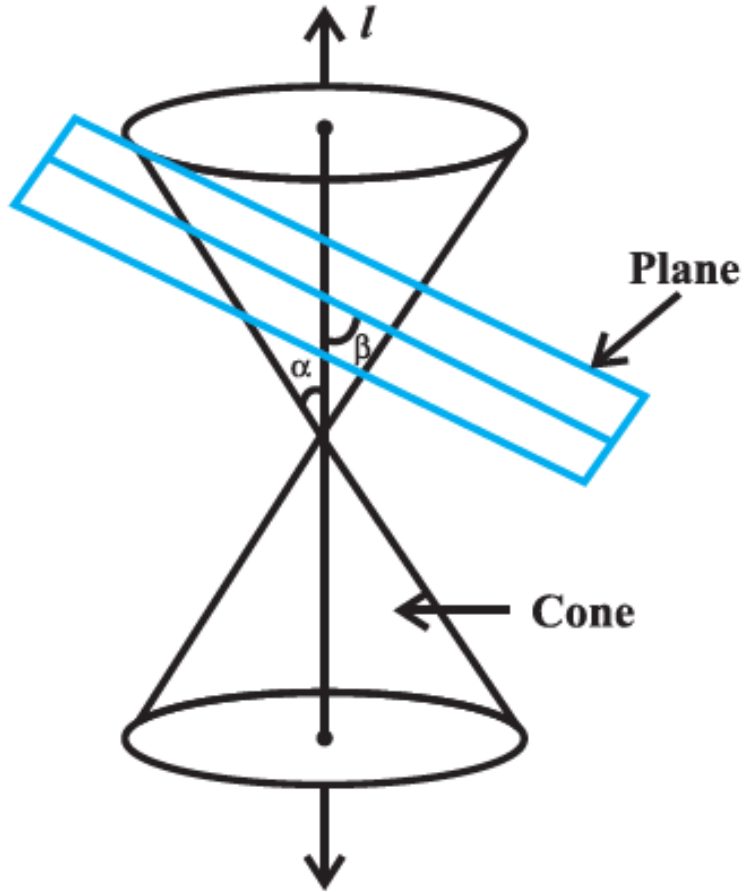


# RIGHT CIRCULAR CONE



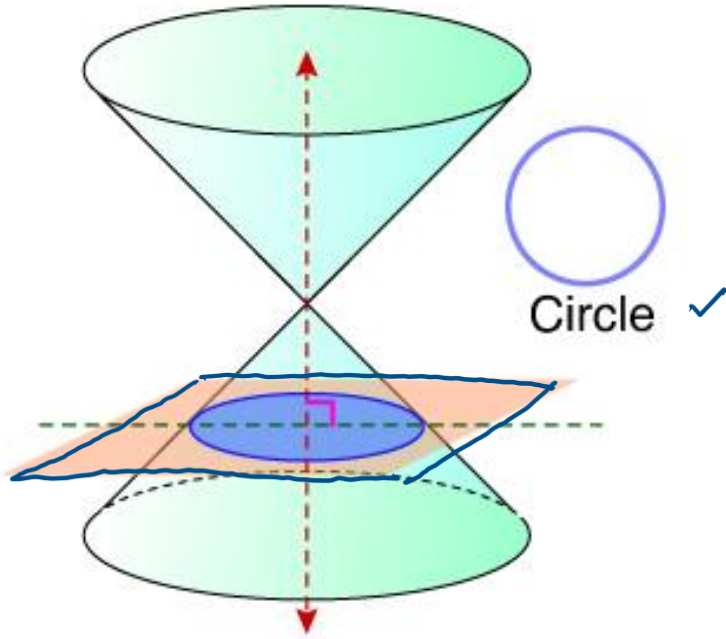
double-napped  
right-circular cone.

# SECTIONS OF CONE



$\beta$  - angle between axis and plane

# CONIC SECTIONS

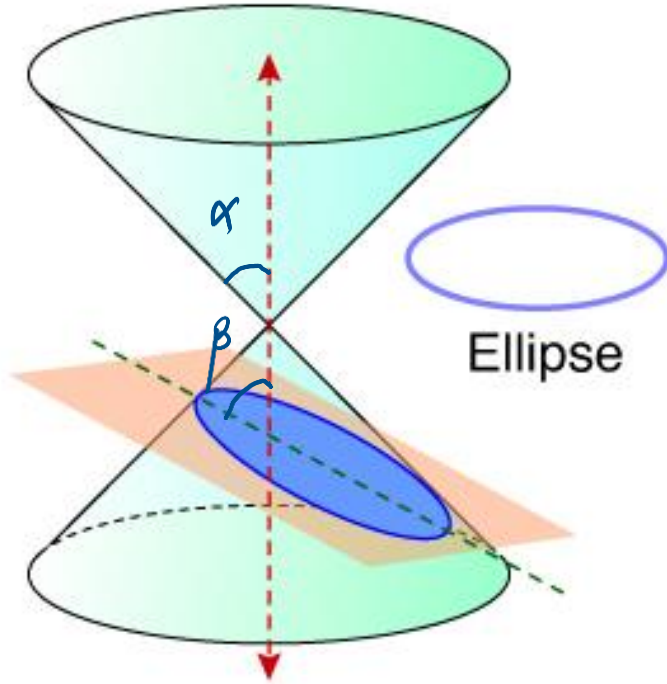


When  $\beta = 90^\circ$ , the section is a *circle*.



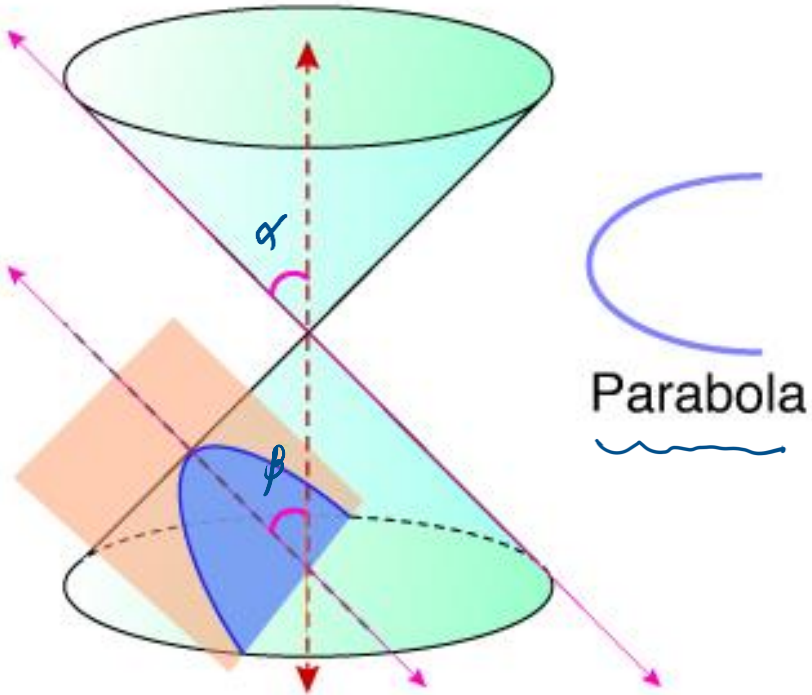


# CONIC SECTIONS



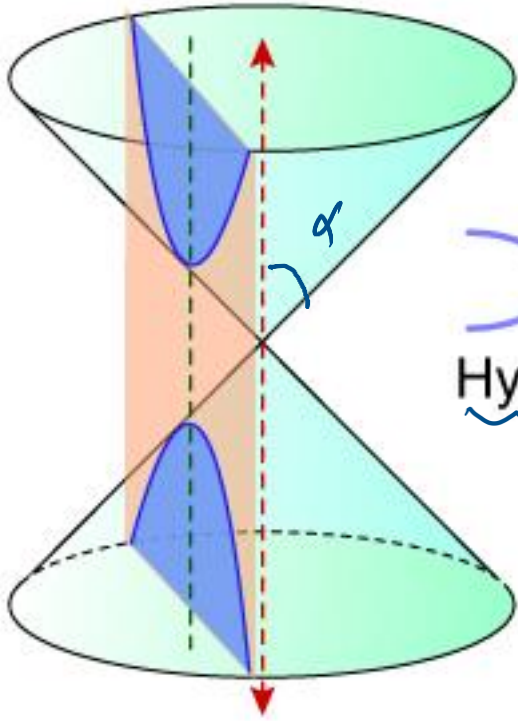
When  $\alpha < \beta < 90^\circ$ , the section is an ellipse.

# CONIC SECTIONS



When  $\beta = \alpha$ ; the section is a parabola.

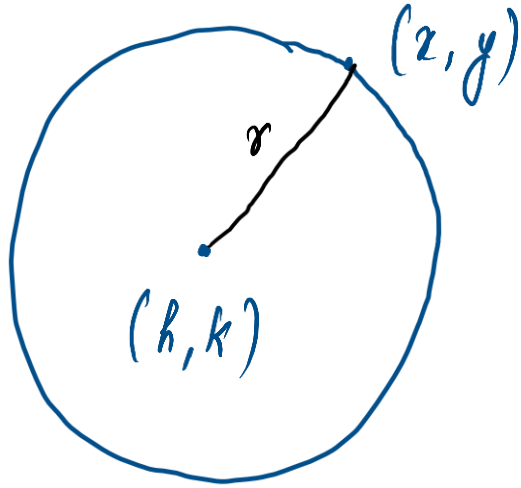
# CONIC SECTIONS



When  $0 \leq \beta < \alpha$ ; the plane cuts through both the nappes and the curves of intersection is a hyperbola.



# CIRCLE



$$r = \sqrt{(x-h)^2 + (y-k)^2}$$

①

$$r^2 = (x-h)^2 + (y-k)^2$$

# EQUATIONS OF CIRCLE

$$\rightarrow \underline{x^2 + y^2 + 2gx + 2fy + c = 0}$$

$$\text{centre} \rightarrow (-g, -f)$$

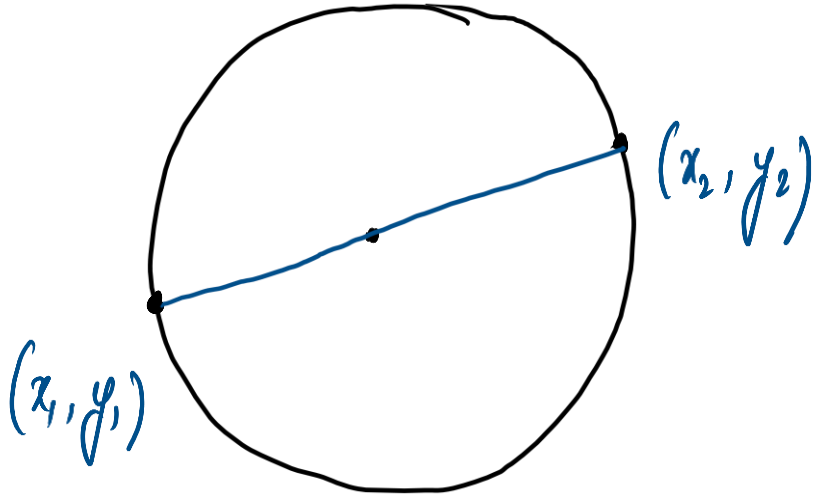
$$\text{radius} \rightarrow \sqrt{g^2 + f^2 - c}$$

2<sup>nd</sup> degree eqn

$$\underline{ax^2 + 2hxy + by^2 + 2gx + 2fy + c = 0}$$

$$\text{circle} \rightarrow \left\{ \begin{array}{l} \text{coeff. of } x^2 = \text{coeff. of } y^2 \\ a = b \neq 0 \\ \underline{h = 0} \end{array} \right\}$$

# EQUATIONS OF CIRCLE – WITH COORDINATES OF DIAMETER



End points  
of diameter

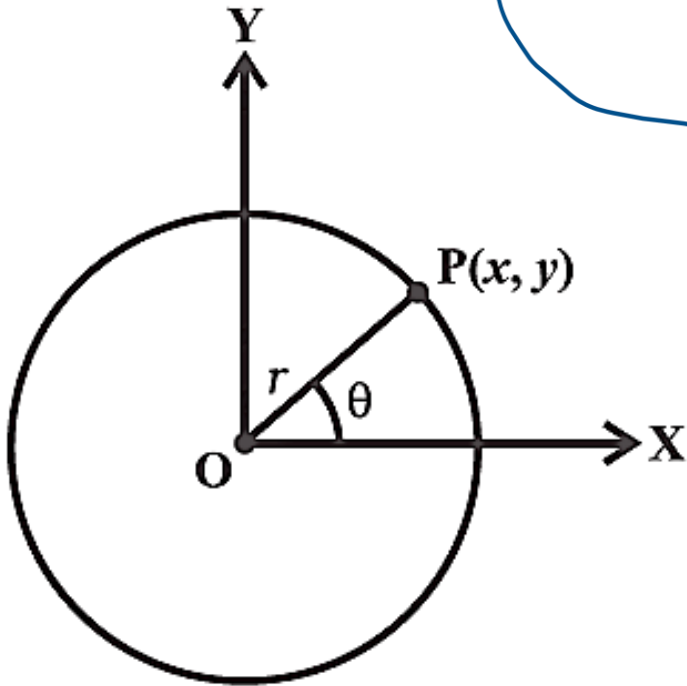
$$\underline{(x-h)^2} + (y-k)^2 = r^2$$

$$(x-x_1)(x-x_2) + (y-y_1)(y-y_2) = 0$$

# EQUATIONS OF CIRCLE – PARAMETRIC FORM

$$x - h = r \cos\theta, y - k = r \sin\theta$$
$$x = h + r \cos\theta, y = k + r \sin\theta.$$

parametric eqns



. If  $(a, b)$  is the centre and  $c$  is the radius of the circle  $x^2 + y^2 + 2x + 6y + 1 = 0$ , then what is the value of  $a^2 + b^2 + c^2$ ?

(PYQ - 2024 - I)

of the form,

$$x^2 + y^2 + 2gx + 2fy + c = 0$$

$$a^2 + b^2 + c^2$$

$$(-1)^2 + (-3)^2 + (3)^2$$

$$(19)$$

$$x^2 + y^2 + \underline{2x} + \underline{6y} + \underline{1} = 0$$

$$g = 1 ; f = 3 \quad c = 1$$

$$\text{centre} \rightarrow (-g, -f) = (-1, -3)$$

$$a = -1$$

$$b = -3$$

$$c = 3$$

$$\text{radius} = c = \sqrt{1^2 + 3^2 - 1} = \sqrt{1 + 9 - 1} = \underline{\underline{3}}$$

(a) 19 ✓

(b) 18

(c) 17

(d) 11

The equation of a circle is

$$(x^2 - 4x + 3) + (y^2 - 6y + 8) = 0$$

(PYQ - 2024 - II)

Which of the following statements are correct?

- I. The end points of a diameter of the circle are at (1, 2) and (3, 4). ✓
- II. The end points of a diameter of the circle are at (1, 4) and (3, 2). ✓
- III. The end points of a diameter of the circle are at (2, 4) and (4, 2). ✗

Select the answer using the code given below.

- (a) I and II only ✓
- (b) II and III only
- (c) I and III only
- (d) I, II and III

$$\frac{2+4}{2}, \frac{4+2}{2}$$

$$(3, 3) \quad \checkmark$$

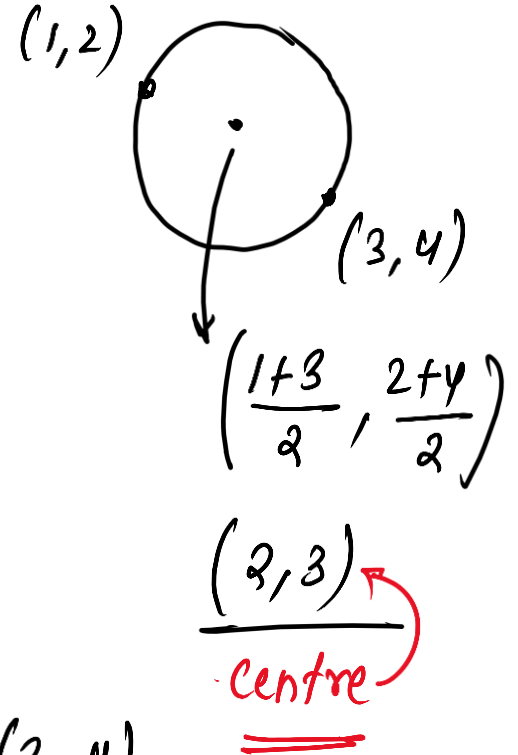
$$x^2 - 4x + 3 = (x-1)(x-3)$$

$$y^2 - 6y + 8 = (y-2)(y-4)$$

eqn of circle,

$$(x-1)(x-3) + (y-2)(y-4) = 0$$

end points of diameter  $\rightarrow$   $\left\{ \begin{array}{l} (1, 2), (3, 4) \\ (1, 4), (3, 2) \end{array} \right.$





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CLASS 3

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