Maths Formula Sheet

Chapter by chapter, topic by topic. Written by the PadhoNa team for quick revision.

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CHAPTER 26

Ellipse

Standard ellipse x²/a² + y²/b² = 1 (a > b)

$$b^2 = a^2(1-e^2), \qquad \text{foci } (\pm ae, 0), \qquad \text{directrices } x = \pm\frac{a}{e}, \qquad \text{latus rectum } \frac{2b^2}{a}$$

PARAMETRIC

$$(a\cos\theta,\ b\sin\theta)$$

FOCAL DISTANCES

$$SP = a - ex, \quad S'P = a + ex, \quad SP + S'P = 2a$$

Tangent, normal and chord

TANGENT

$$\frac{xx_1}{a^2} + \frac{yy_1}{b^2} = 1; \qquad \frac{x\cos\theta}{a} + \frac{y\sin\theta}{b} = 1; \qquad y = mx \pm \sqrt{a^2m^2 + b^2}$$

NORMAL

$$\frac{a^2x}{x_1} - \frac{b^2y}{y_1} = a^2 - b^2; \qquad ax\sec\theta - by\csc\theta = a^2 - b^2$$

DIRECTOR CIRCLE

$$x^2 + y^2 = a^2 + b^2$$

CHORD WITH MIDPOINT

$$T = S_1$$

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