# Maths Formula Sheet

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

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CHAPTER 25

## Parabola

### Standard parabola y² = 4ax

$$\text{focus } (a,0),\ \text{directrix } x=-a,\ \text{latus rectum } 4a,\ \text{vertex } (0,0)$$

PARAMETRIC

$$(at^2,\ 2at)$$

FOCAL DISTANCE

$$SP = x + a$$

FOCAL CHORD

$$t_1 t_2 = -1; \qquad \frac{1}{SP} + \frac{1}{SQ} = \frac{1}{a}$$

### Tangent, normal and chord

TANGENT

$$yy_1 = 2a(x + x_1); \qquad ty = x + at^2; \qquad y = mx + \frac{a}{m}$$

NORMAL

$$y = -tx + 2at + at^3; \qquad y = mx - 2am - am^3$$

CHORD THROUGH $T_1$, $T_2$

$$2x - (t_1 + t_2)y + 2at_1t_2 = 0$$

NORMAL MEETS AGAIN

$$t_2 = -t_1 - \frac{2}{t_1}$$

TANGENTS' INTERSECTION

$$\left(at_1t_2,\ a(t_1 + t_2)\right)$$

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