PARABOLA

1. Equation of standard parabola :

$y^2 = 4ax$, Vertex is (0, 0), focus is (a, 0), Directrix is $x + a = 0$ and Axis is $y = 0$. Length of the latus rectum = 4a, ends of the latus rectum are L(a, 2a) & L' (a, – 2a).

2. Parametric Representation: $x = at^2$ & $y = 2at$

3. Tangents to the Parabola $y^2 = 4ax$:

1. Slope form $y = mx + \frac{a}{m}$ $(m \neq 0)$ 2. Parametric form $ty = x + at^2$

3. Point form $T = 0$

4. Normals to the parabola $y^2 = 4ax$:

$y - y_1 = -\frac{y_1}{2a}(x - x_1)$ at (x_1, y_1) ; $y = mx - 2am - am^3$ at $(am^2, -2am)$;

$y + tx = 2at + at^3$ at $(at^2, 2at)$.