2.CIRCLE

1. Intercepts made by Circle $x^2 + y^2 + 2gx + 2fy + c = 0$ **on the Axes:**

(a) $2\sqrt{g^2 - c}$ on x -axis (b) $2\sqrt{f^2 - c}$ on y - aixs

2. Parametric Equations of a Circle: $x = h + r\cos\theta$; $y = k + r\sin\theta$

3. Tangent :

(a) Slope form : $y = mx \pm a\sqrt{1+m^2}$

(b) Point form : $xx_1 + yy_1 = a^2$ or $T = o$

(c) Parametric form : $x\cos\alpha + y\sin\alpha = a$.

4. Pair of Tangents from a Point: $SS_1 = T^2$.

5. Length of a Tangent : Length of tangent is $\sqrt{S_1}$

6. Director Circle: $x^2 + y^2 = 2a^2$ for $x^2 + y^2 = a^2$

7. Chord of Contact: $T = 0$

1. Length of chord of contact = $\frac{2LR}{\sqrt{R^2+L^2}}$

2. Area of the triangle formed by the pair of the tangents & its chord of contact = $\frac{RL^3}{R^2+L^2}$

3. Tangent of the angle between the pair of tangents from (x_1, y_1) = $\left(\frac{2RL}{L^2-R^2}\right)$

4. Equation of the circle circumscribing the triangle PT_1T_2 is : $(x - x_1)(x + g) + (y - y_1)(y + f) = 0$.

8. Condition of orthogonality of Two Circles: $2g_1g_2 + 2f_1f_2 = c_1 + c_2$.

9. Radical Axis : $S_1 - S_2 = 0$ i.e. $2(g_1 - g_2)x + 2(f_1 - f_2)y + (c_1 - c_2) = 0$.

10. Family of Circles: $S_1 + KS_2 = 0$, $S + KL = 0$.