1. The equation of the Family of Circles touches the line **y – y1 = m (x – x1)** at (x1, y1) for any values of m is (x – x1)^2 + (y – y1)^2 + λ[(y – y1) – m(x – x1)] = 0.

(2) **Equation of chord of contact :** The equation of the chord of contact of tangents drawn from a point

$$(x_1,y_1)$$

to the circle

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

is

$$xx_1+yy_1=a^2.$$

3. Equation of chord of contact at

$$(x_1,y_1)$$

to the circle

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

is

$$xx_1+yy_1+g(x+x_1)+f(y+y_1)+c=0$$

4.Chord length = $\mathbf{2\sqrt{r^2-d^2}}$, where r is the radius of the circle and d is the perpendicular distance of the center of the circle to the chord.

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