

1. The general equation of the Family of Circles is passing through the intersection of  $S_1$  and  $S_2$  which is given by  $S_1 + KS_2 = 0$ , where  $k \neq -1$ .

2. Family of a circle passing through two mention points i.e.  $A(x_1, y_1)$  and  $B(x_2, y_2)$ .

The equation of the circle is  $(x - x_1)(x - x_2) + (y - y_1)(y - y_2) = 0$

3. Family of Circle Touching the Circle  $S = 0$  and the Line  $L = 0$  at their Point of Contact

The family is given by equation  $S + \lambda L = 0$ , where  $\lambda$  is a required family.