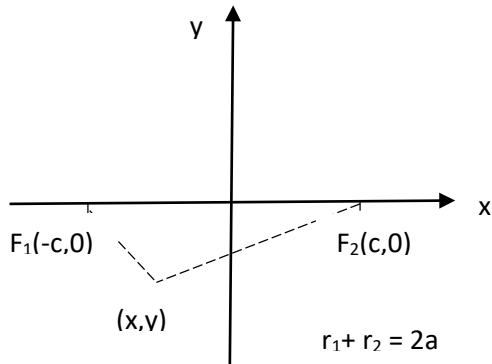


Ellipse



$$r_1^2 = (x + c)^2 + y^2$$

$$r_2^2 = (x - c)^2 + y^2$$

$$r_1^2 - r_2^2 = (x + c)^2 - (x - c)^2$$

$$= 2x \cdot 2c$$

$$(r_1 - r_2)(r_1 + r_2) = 4cx$$

$$r_1 - r_2 = \frac{4c}{2a}x = \frac{2c}{a}x, \quad r_1 + r_2 = 2a$$

$$\left. \begin{array}{l} r_1 - r_2 = \frac{2c}{a}x \\ r_1 + r_2 = 2a \end{array} \right\} +$$

$$r_1 = a + \frac{c}{a}x$$

$$\left(a + \frac{c}{a}x\right)^2 = (x + c)^2 + y^2$$

$$a^2 - c^2 + 2cx + \frac{c^2}{a^2}x^2 = x^2 + 2cx + y^2$$

$$b^2 = \left(1 - \frac{c^2}{a^2}\right)x^2 + y^2$$

$$b^2 = \frac{b^2}{a^2}x^2 + y^2$$

$$\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$$

$$r_1 + r_2 = 2a$$

$$a^2 - c^2 = b^2$$

example: $\frac{x^2}{4} + y^2 = 1 \Rightarrow c^2 = 4 - 1 = 3$

