Circumference equation from two points (po and po) and radius (ra)

point0: $P(x0, y0)$
point1: $P(x1, y1)$

$$x_0^2 + y_0^2 + ax_0 + bx_0 + c = 0 \qquad - \tag{1}$$
$$x_1^2 + y_1^2 + ax_1 + bx_1 + c = 0 \qquad = \tag{2}$$

$$(x_0 + x_1 + a)(x_0 - x_1) + (y_0 + y_1 + b)(y_0 - y_1) = 0 \tag{3}$$

$$\tag{4}$$

$$b = -\frac{(x_0 + x_1 + a)(x_0 - x_1)}{y_0 - y_1} - (y_0 + y_1) \tag{5}$$

$$b = -a\frac{x_0 - x_1}{y_0 - y1} - \frac{x_0^2 - x_1^2 + y_0^2 - y_1^2}{y_0 - y_1} \tag{6}$$

$$\gamma = -\frac{x_0 - x_1}{y_0 - y_1} \tag{7}$$

$$\delta = -\frac{x_0^2 - x_1^2 + y_0^2 - y_1^2}{y_0 - y_1} \tag{8}$$

$$\Rightarrow \qquad b = \gamma a + \delta \tag{9}$$

$$x_0^2 + y_0^2 + ax_0 + bx_0 + c = 0 \qquad + \tag{10}$$

$$x_1^2 + y_1^2 + ax_1 + bx_1 + c = 0 \qquad = \tag{11}$$

$$x_0^2 + x_1^2 + y_0^2 + y_1^2 + a(x_0 + x_1) + (\gamma a + \delta)(y_0 + y_1) - 2R^2 + \frac{a^2}{2} + \frac{b^2}{2} = 0 \tag{12}$$

$$\Rightarrow a_r x^2 + 2b_r x + c_r = 0 \tag{13}$$

$$a_{1,2} = \frac{-b_r \pm \sqrt{b_r^2 - a_r c_r}}{a_r} \tag{14}$$