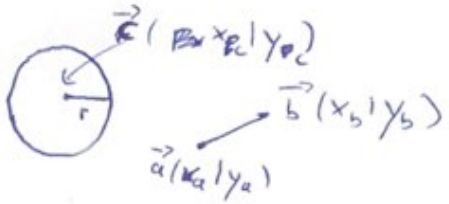
$$(x_p - x_c)^2 + (y_p - y_c)^2 = r^2$$ Intersection Line - Circle



$$d_x = x_b - x_a$$
$$d_y = y_b - y_a$$
$$x_p = x_a + d_x \cdot q$$
$$y_p = y_a + d_y \cdot q$$

} für q muss nach Lösung gelten $0 \leq q \leq 1$

$$\Rightarrow x_a^2 + 2 d_x q x_a + d_x^2 q^2 - 2 x_c x_a - 2 x_c d_x q + x_c^2 +$$
$$+ y_a^2 + 2 d_y q y_a + d_y^2 q^2 - 2 y_c y_a - 2 y_c d_y q + y_c^2 = r^2$$
$$(d_x^2 + d_y^2) \cdot q^2 + 2 d_x x_a q + 2 d_y y_a q - 2 x_c d_x q - 2 y_c d_y q +$$
$$+ x_a^2 + y_a^2 - 2 x_c x_a - 2 y_c y_a + x_c^2 + y_c^2 = r^2 \quad | -r^2$$
$$\underbrace{(d_x^2 + d_y^2)}_{a=} \cdot q^2 + \underbrace{(2 d_x x_a + 2 d_y y_a - 2 x_c d_x - 2 y_c d_y)}_{b=} \cdot q +$$
$$+ \underbrace{(x_a^2 + y_a^2 - 2 x_c x_a - 2 y_c y_a + x_c^2 + y_c^2 - r^2)}_{c=} = 0$$