

**Zadatak 20.** Odredi jednadžbu kružnice koja dira obje koordinatne osi i pravac  $4x - 3y + 12 = 0$ .

*Rješenje.*

$$y = \frac{4}{3}x + 4, \quad |p| = |q| = r$$

$$r^2 \left(1 + \frac{16}{9}\right) = \left(q - \frac{4}{3}p - 4\right)^2$$

$$\frac{25}{9}r^2 = q^2 - \frac{8}{3}qp + \frac{16}{9}p^2 - 8q + \frac{32}{3}p + 16$$

$$25r^2 = 9q^2 - 24qp + 16p^2 - 72q + 96p + 144$$

$$0 = -24qp - 72q + 96p + 144$$

$$0 = -qp - 3q + 4p + 6$$

I. i III. kvadrant  $p = q$

$$p^2 - p - 6 = 0$$

$$p_{1,2} = \frac{1 \pm \sqrt{1 + 24}}{2}$$

$$p_{1,2} = \frac{1 \pm 5}{2}$$

$$p_1 = 3, \quad q_1 = 3$$

$$p_2 = -2 \quad q_2 = -2$$

$$r_1 = 3 \quad r_2 = 2$$

$$(x + 2)^2 + (y + 2)^2 = 4,$$

$$(x - 3)^2 + (y - 3)^2 = 9,$$

II. i IV. kvadrant  $p = -q$

$$p^2 + 7p + 6 = 0$$

$$p_{1,2} = \frac{-7 \pm \sqrt{49 - 24}}{2}$$

$$p_{1,2} = \frac{-7 \pm 5}{2}$$

$$p_1 = -1, \quad q_1 = 1$$

$$p_2 = -6 \quad q_2 = 6$$

$$r_1 = 1 \quad r_2 = 6$$

$$(x + 1)^2 + (y - 1)^2 = 1,$$

$$(x + 6)^2 + (y - 6)^2 = 36.$$