

Zadatak 57. Napiši jednadžbu kružnice koja dira os Ox u ishodištu koordinatnog sustava, a dira i kružnicu $(x - 6)^2 + (y - 13)^2 = 25$.

Rješenje.

$$S(6, 13), r = 5$$

$$S_1(0, q), q = r_1 \text{ Ako se kružnice diraju izvana vrijedi } r_1 + r = d(S, S_1).$$

$$d(S, S_1) = \sqrt{36 + (q - 13)^2}$$

$$r + r_1 = 5 + q$$

$$(5 + q)^2 = \sqrt{36 + (q - 13)^2}^2$$

$$25 + 10q + q^2 = 36 + q^2 - 26q + 169$$

$$36q = 180$$

$$q = 5$$

$$r_1 = 5$$

$$S_1(0, 5)$$

$$x^2 + (y - 5)^2 = 25$$

Ako se kružnice diraju iznutra vrijedi $r_2 - r = d(S, S_2)$.

$$r_2 - r = q - 5$$

$$(q - 5)^2 = \sqrt{36 + (q - 13)^2}^2$$

$$25 - 10q + q^2 = 36 + q^2 - 26q + 169$$

$$16q = 180$$

$$q = \frac{45}{4}$$

$$r_2 = \frac{45}{4}$$

$$S_2\left(0, \frac{45}{4}\right)$$

$$x^2 + \left(y - \frac{45}{4}\right)^2 = \left(\frac{45}{4}\right)^2.$$