

**Zadatak 37.** Odredi zajedničke tangente dviju kružnica,  
 $x^2 + y^2 = 45$  i  $x^2 + y^2 - 20x - 25 = 0$ .

**Rješenje.**

$$S_1(0, 0), r_1^2 = 45$$

$$S_2(10, 0), r_2^2 = 125$$

$$45(1 + k^2) = (0 - 0 - l)^2$$

$$125(1 + k^2) = (0 - 10k - l)^2$$

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$$l^2 = 45(1 + k^2)$$

$$125(1 + k^2) = (-10k - l)^2$$

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$$125 + 125k^2 = 100k^2 + 20k\sqrt{45(1 + k^2)} + 45 + 45k^2$$

$$-20k^2 + 80 = 20k\sqrt{45(1 + k^2)}$$

$$4 - k^2 = k\sqrt{45(1 + k^2)}/^2$$

$$16 - 8k^2 + k^4 = 45k^2(1 + k^2)$$

$$16 - 8k^2 + k^4 = 45k^2 + 45k^4$$

$$-44k^4 - 53k^2 + 16 = 0$$

$$44k^4 + 53k^2 - 16 = 0$$

$$k_{1,2}^2 = \frac{-53 \pm \sqrt{2809 + 2816}}{88}$$

$$k_{1,2}^2 = \frac{-53 \pm 75}{88}$$

$$k_{1,2} = \pm \frac{1}{2}$$

$$l^2 = 45 \left(1 + \frac{1}{4}\right)$$

$$l^2 = \frac{225}{4}$$

$$l_{1,2} = \pm \frac{15}{2}$$

$$x - 2y + 15 = 0, x + 2y + 15 = 0.$$