

Zadatak 16. Odredi simetralu tupog kuta što ga određuju pravci $2x + 4y - 11 = 0$ i $x - 2y + 5 = 0$.

Rješenje.

$$p \dots 2x + 4y - 11 = 0 \implies y = -\frac{1}{2}x + \frac{11}{4}$$

$$q \dots x - 2y + 5 = 0 \implies y = \frac{1}{2}x + \frac{5}{2}$$

Za točku $T(x, y)$ na simetrali kuta vrijedi:

$$d(T, p) = d(T, q)$$

$$\frac{|A_1x + B_1y + C_1|}{\sqrt{A_1^2 + B_1^2}} = \frac{|A_2x + B_2y + C_2|}{\sqrt{A_2^2 + B_2^2}}$$

$$\frac{|2x + 4y - 11|}{\sqrt{4 + 16}} = \frac{|x - 2y + 5|}{\sqrt{1 + 4}}$$

$$\frac{|2x + 4y - 11|}{2\sqrt{5}} = \frac{|x - 2y + 5|}{\sqrt{5}} \quad / \cdot 2\sqrt{5}$$

$$|2x + 4y - 11| = 2|x - 2y + 5| \implies$$

$$2x + 4y - 11 = \pm 2(x - 2y + 5)$$

$$1) \quad 2x + 4y - 11 = 2(x - 2y + 5)$$

$$2x + 4y - 11 = 2x - 4y + 10$$

$$8y = 21 \implies y = \frac{21}{8}$$

$$8y - 21 = 0 \dots s_1$$

$$2) \quad 2x + 4y - 11 = -2(x - 2y + 5)$$

$$2x + 4y - 11 = -2x + 4y - 10$$

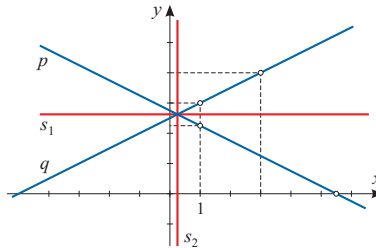
$$4x = 1 \implies x = \frac{1}{4}$$

$$4x - 1 = 0 \dots s_2$$

Dobili smo dva pravca. Jedan od njih je simetrala tupog kuta, a drugi šiljastog kuta između pravaca p i q . Nacrtajmo sliku.

$$p \dots \left(1, \frac{9}{4}\right), \left(\frac{11}{2}, 0\right)$$

$$q \dots (1, 3), (3, 4)$$



Traženo rješenje je $4x - 1 = 0$.