

Rješenja zadataka 8.4

Zadatak 1. Odredi udaljenost dane točke od pravca:

1) $T(-1, 1)$, $5x - 12y - 22 = 0$;

2) $T(1, -2)$, $24x - 10y + 6 = 0$;

3) $T(1, -2)$, $x - 2y - 5 = 0$.

Rješenje.

1)

$$T(-1, 1)$$

$$5x - 12y - 22 = 0$$

$$x_0 = -1, y_0 = 1$$

$$A = 5, B = -12, C = -22$$

$$\begin{aligned} d(T, p) &= \frac{|Ax_0 + By_0 + C|}{\sqrt{A^2 + B^2}} = \frac{|5 \cdot (-1) + (-12) \cdot 1 - 22|}{\sqrt{25 + 144}} \\ &= \frac{|-5 - 12 - 22|}{\sqrt{169}} = \frac{|-39|}{13} = 3 \end{aligned}$$

2)

$$T(1, -2)$$

$$24x - 10y + 6 = 0$$

$$x_0 = 1, y_0 = -2$$

$$A = 24, B = -10, C = 6$$

$$d(T, p) = \frac{|Ax_0 + By_0 + C|}{\sqrt{A^2 + B^2}} = \frac{|24 \cdot 1 + (-10) \cdot (-2) + 6|}{\sqrt{24^2 + (-10)^2}} = \frac{50}{26} = \frac{25}{13}$$

3)

$$T(1, -2)$$

$$x - 2y - 5 = 0$$

$$x_0 = 1, y_0 = -2$$

$$A = 1, B = -2, C = -5$$

$$d(T, p) = \frac{|Ax_0 + By_0 + C|}{\sqrt{A^2 + B^2}} = \frac{|1 \cdot 1 + 2 \cdot 2 - 5|}{\sqrt{1 + 4}} = \frac{0}{\sqrt{5}} = 0$$

$d = 0$, točka leži na pravcu.