

PRAVAC

(zadatci)

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Udžb. Str. 68 zad 1. 3)

$$\begin{aligned}
 x + y + 3 &= 0 \quad (1) \Rightarrow y = -x - 3 \quad (E) \\
 x + 4y - 5 &= 0 \quad (1) \Rightarrow 4y = -x + 5 \quad | :4 \Rightarrow y = -\frac{1}{4}x + \frac{5}{4} \quad (E)
 \end{aligned}$$

$$\begin{aligned}
 k_1 &= -1 \\
 k_2 &= -\frac{1}{4}
 \end{aligned}$$

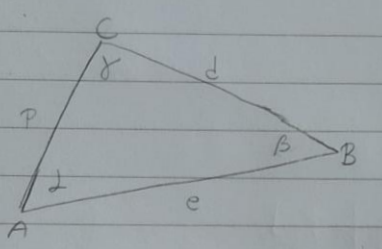
$$\text{tg } \varphi = \left| \frac{k_2 - k_1}{1 + k_1 \cdot k_2} \right|$$

$$\text{tg } \varphi = \left| \frac{-\frac{1}{4} - (-1)}{1 + (-\frac{1}{4}) \cdot (-1)} \right|$$

$$\text{tg } \varphi = \frac{3}{5}$$

$$\varphi = 30^\circ 57' 49''$$

Udžb. Str. 68 zad. 4.



A(-1, -1)	$k_1 = \frac{1}{3}$ (e)
B(5, 1)	$k_2 = -\frac{5}{4}$ (d)
C(1, 6)	$k_3 = \frac{7}{2}$ (p)

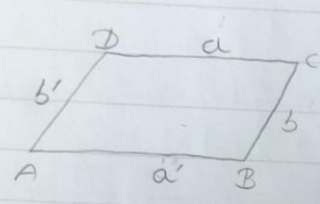
$$\begin{array}{l}
 -1 = -k + e \quad | \cdot (-1) \\
 1 = 5k + e \\
 1 = k - e \\
 1 = 5k + e \\
 2 = 6k \\
 k = \frac{2}{6} = \frac{1}{3}
 \end{array}
 \qquad
 \begin{array}{l}
 1 = 5k + e \\
 6 = k + e \quad | \cdot (-1) \\
 1 = 5k + e \\
 -6 = -k - e \\
 -5 = 4k \\
 k = -\frac{5}{4}
 \end{array}
 \qquad
 \begin{array}{l}
 -1 = -k + e \quad | \cdot (-1) \\
 6 = k + e \\
 1 = k - e \\
 6 = k + e \\
 7 = 2k \\
 k = \frac{7}{2}
 \end{array}$$

$$\begin{aligned}
 \text{tg } \alpha &= \left| \frac{\frac{1}{3} - \frac{7}{2}}{1 + \frac{7}{2} \cdot \frac{1}{3}} \right| & \text{tg } \beta &= \left| \frac{\frac{1}{3} - (-\frac{5}{4})}{1 + (-\frac{5}{4}) \cdot \frac{1}{3}} \right| & \text{tg } \gamma &= \left| \frac{-\frac{5}{4} - \frac{7}{2}}{1 + \frac{7}{2} \cdot (-\frac{5}{4})} \right| \\
 &= \frac{19}{13} & &= \frac{19}{7} & &= \frac{38}{27} \\
 \alpha &= 55^\circ 37' & \beta &= 69^\circ 46' & \gamma &= 54^\circ 36'
 \end{aligned}$$

Udžb. Str. 68 zad. 18.

$T(-3, -4) \perp$ na pravac AB $A(-5, 2)$ $B(4, -1)$
 $k_1 = -\frac{1}{3}$ $2 = -5k + l \quad | \cdot (-1)$
 $k_2 = 3$ $-1 = 4k + l$
 $-4 = -3 \cdot 3 + l$ $-2 = 5k$ $-1 = -\frac{1}{3} \cdot 4 + l$
 $l = 5$ $-1 = 4k + l$ $l = \frac{1}{3}$
 $k = -\frac{1}{3}$ $y = -\frac{1}{3}x + \frac{1}{3}$
 $y = 3x + 5$

Udžb. Str. 68 zad. 22.



$a \dots x - 2y + 4 = 0$
 $-2y = -x - 4 \quad | : 2$
 $-y = -\frac{1}{2}x - 2$
 $y = \frac{1}{2}x + 2$
 $b \dots x + y - 8 = 0$
 $y = -x + 8$

$B \dots a' \text{ i } b \text{ pravac}$
 $a' \parallel a \Rightarrow k_{a'} = \frac{1}{2}$ $\text{pravac } a' \Rightarrow -1 = \frac{1}{2} \cdot 0 + l$
 $l = -1$
 $y = \frac{1}{2}x - 1$

$y = \frac{1}{2}x - 1 \quad | \cdot 2$
 $y = -x + 8$
 $2y = x - 2$ $2 = -x + 8$ $B(6, 2)$
 $y = x + 8$ $-x = 2 - 8$
 $3y = 6$ $x = 6$
 $y = 2$

C... a i b pravac

$$y = \frac{1}{2}x + 2 \quad | \cdot 2$$

$$y = -x + 8$$

$C(4, 4)$

$$2y = x + 4 \quad 4 = -x + 8$$

$$y = -x + 8 \quad -x = 4 - 8$$

$$3y = 12 \quad x = 4$$

$$y = 4$$

D... a i b' pravac

$b' \parallel b$

$$kb' = -1$$

$$-1 = -1 \cdot 0 + e$$

$$y = \frac{1}{2}x + 2 \quad | \cdot 2$$

$$e = -1$$

$$y = -x - 1$$

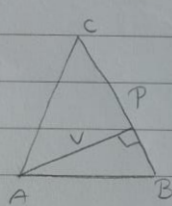
$$y = -x - 1$$

$$2y = x + 4 \quad 1 = -x - 1$$

$$y = -x - 1 \quad -x = 2 \quad D(-2, 1)$$

$$3y = 3 \Rightarrow y = 1 \quad x = 2$$

Udžb. Str. 68 zad. 26.



$A(0, 2)$

$B(4, -1)$

$C(6, 3)$

$$p... -1 = 4k + e \quad | \cdot (-1)$$

$$3 = 6k + e$$

$$1 = -4k + e \quad 3 = 6 \cdot 2 + e$$

$$3 = 6k + e \quad e = -9$$

$$4 = 2k \quad y = 2x - 9$$

$$k = 2$$

$$v \perp p$$

$$k_v = -\frac{1}{2}$$

$$2 = -\frac{1}{2} \cdot 0 + e$$

$$2 = e$$

$$y = -\frac{1}{2}x + 2 \quad (v) \checkmark$$

Udžb. Str. 69 zad. 29.

$O(0,0)$

$p \perp c \quad k_c = 3$
 $0 = 3 \cdot 0 + e \quad y = 3x$
 $e = 0$

$q \perp b \quad k_b = \frac{5}{3}$
 $0 = \frac{5}{3} \cdot 0 + e \quad y = \frac{5}{3}x$
 $e = 0$

$r \perp a \quad k_a = -\frac{1}{3}$
 $0 = -\frac{1}{3} \cdot 0 + e \quad y = -\frac{1}{3}x$
 $e = 0$

$d \parallel a \quad k_d = -\frac{1}{3}$
 $0 = -\frac{1}{3} \cdot 0 + e \quad y = -\frac{1}{3}x$
 $e = 0$

$c \dots \quad y = 3x$
 $y = -\frac{3}{5}x + \frac{6}{5} \quad | \cdot (-1)$
 $y = 3x$
 $-y = \frac{3}{5}x - \frac{6}{5}$
 $-\frac{7}{5}x = -\frac{6}{5}$
 $x = \frac{1}{3}$
 $y = 3 \cdot \frac{1}{3} = 1$
 $c(\frac{1}{3}, 1)$

$a \dots \quad y = -\frac{1}{3}x$
 $y = -\frac{1}{3}x + \frac{1}{3} \quad | \cdot (-1)$
 $y = \frac{1}{3}x$
 $-y = \frac{1}{3}x - \frac{1}{3}$
 $-2x = -\frac{1}{3}$
 $x = \frac{1}{6}$
 $y = -\frac{1}{3} \cdot \frac{1}{6} = -\frac{1}{18}$
 $y = \frac{1}{6}$

$b \dots \quad y = \frac{5}{3}x$
 $y = \frac{5}{3}x - \frac{1}{3} \quad | \cdot (-1)$
 $-y = -\frac{5}{3}x + \frac{1}{3}$
 $-2x = -\frac{1}{3}$
 $x = \frac{1}{6}$
 $y = \frac{5}{3} \cdot \frac{1}{6} = \frac{5}{18}$
 $y = \frac{5}{6}$

$y = \frac{5}{3}x$
 $\frac{5}{18} = \frac{1}{3}k + e$
 $1 = \frac{1}{3}k + e \quad | \cdot (-1)$
 $-\frac{5}{18} = \frac{1}{6}k + e$
 $-1 = -\frac{1}{3}k + e$
 $-\frac{13}{18} = -\frac{1}{6}k \quad | \cdot (-6)$
 $k = \frac{13}{3}$
 $1 = \frac{1}{3} \cdot \frac{13}{3} + e$
 $e = -\frac{4}{9}$
 $y = \frac{13}{3}x - \frac{4}{9}$

Udžb. Str. 69 zad. 41.

$T(3, -1)$
 $x + 2y - 6 = 0 \Rightarrow 2y = -x + 6 \quad | :2$
 $y = -\frac{1}{2}x + 3$

$k_1 \perp k_2 \quad k_2 = 2$
 $-1 = 2 \cdot 3 + e \quad y = 2x - 7$
 $e = -7$

$y = -\frac{1}{2}x + 3 \quad | \cdot (-1)$
 $y = 2x - 7$
 $-y = \frac{1}{2}x - 3$
 $y = 2x - 7 \quad y = 2 \cdot 4 - 7$
 $-\frac{5}{2}x = -10 \quad y = 1$
 $x = 4$

$T'(4, 1)$

Udžb. Str. 73 zad. 2. 6)

$$\begin{aligned}y &= 3x - 4 & x &= 1 & y &= 3 \cdot 1 - 4 & T &(1, -1) \\y &= 3x + 6 \Rightarrow -3x + y - 6 = 0 & & & y &= -1 & & \end{aligned}$$
$$d(T, P) = \frac{|-3 \cdot 1 + 1 \cdot (-1) + (-6)|}{\sqrt{(-3)^2 + 1^2}}$$
$$= \sqrt{10}$$

Udžb. Str. 73 zad. 3.

$$T(2, 3)$$
$$a... 3x - 2y + 13 = 0 \Rightarrow 3 \cdot 2 - 2 \cdot 3 + 13 = 13 \neq 0$$
$$T \notin a$$
$$a = d(T, a) \quad d(T, a) = \frac{|3 \cdot 2 + (-2) \cdot 3 + 13|}{\sqrt{3^2 + (-2)^2}} \quad P = a^2 = \sqrt{13}^2 = 13$$
$$= \sqrt{13}$$

Udžb. Str. 73 zad. 11.

$$t... y = \frac{1}{2}x - 5 \Rightarrow -\frac{1}{2}x + y + 5 = 0$$
$$S = (1, -2)$$
$$d(S, t) = \frac{|-\frac{1}{2} \cdot 1 + 1 \cdot (-2) + 5|}{\sqrt{(-\frac{1}{2})^2 + 1^2}}$$
$$= \sqrt{5}$$

Udžb. Str. 73 zad. 14.

$A(-3, -1)$
 $B(7, -6)$
 $C(5, 5)$

a... $-6 = 7k + e \quad | \cdot (-1)$

$$\begin{array}{r} 5 = 5k + e \\ 6 = -7k - e \end{array}$$

$$\begin{array}{r} 5 = 5k + e \\ 5 = 5k + e \end{array}$$

$$11 = -2k$$

$$k = -\frac{11}{2}$$

$$e = \frac{65}{2}$$

$$y = -\frac{11}{2}x + \frac{65}{2}$$

$$\frac{11}{2}x + y - \frac{65}{2} = 0 \quad | \cdot 2$$

$$11x + 2y - 65 = 0$$

b... $5 = 5k + e \quad | \cdot (-1)$

$$\begin{array}{r} -1 = -3k + e \\ -5 = -5k - e \end{array}$$

$$\begin{array}{r} -1 = -3k + e \\ -1 = -3k + e \end{array}$$

$$-6 = -8k$$

$$k = \frac{3}{4}$$

$$e = \frac{5}{4}$$

$$y = \frac{3}{4}x + \frac{5}{4}$$

$$-\frac{3}{4}x + y - \frac{5}{4} = 0 \quad | \cdot 4$$

$$-3x + 4y - 5 = 0$$

c... $-1 = -3k + e \quad | \cdot (-1)$

$$\begin{array}{r} -6 = 7k + e \\ 1 = 3k - e \end{array}$$

$$\begin{array}{r} -6 = 7k + e \\ -6 = 7k + e \end{array}$$

$$-5 = 10k$$

$$k = -\frac{1}{2}$$

$$e = -\frac{5}{2}$$

$$y = -\frac{1}{2}x - \frac{5}{2}$$

$$\frac{1}{2}x + y + \frac{5}{2} = 0 \quad | \cdot 2$$

$$x + 2y + 5 = 0$$

$$v_a(A, a) = \frac{|11 \cdot (-3) + 2 \cdot (-1) - 65|}{\sqrt{11^2 + 2^2}}$$

$$= 4\sqrt{5}$$

$$v_c(C, c) = \frac{|1 \cdot 5 + 2 \cdot 5 + 5|}{\sqrt{1^2 + 2^2}}$$

$$= 4\sqrt{5}$$

$$v_b(B, b) = \frac{|-3 \cdot 7 + 4 \cdot (-6) - 5|}{\sqrt{(-3)^2 + 4^2}}$$

$$= 10$$

Udžb. Str. 73 zad. 21. 3)

$$p \quad x - 3y + 11 = 0$$

$$q \quad 2x + 6y + 7 = 0$$

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

$$\frac{|1x - 3y + 11|}{\sqrt{1^2 + (-3)^2}} = \frac{|2x + 6y + 7|}{\sqrt{2^2 + 6^2}}$$

$$\frac{|1x - 3y + 11|}{\sqrt{10}} = \frac{|2x + 6y + 7|}{2\sqrt{10}} \quad | \cdot 2\sqrt{10}$$

$$\frac{2}{2} |1x - 3y + 11| = |2x + 6y + 7|$$

$$\pm 2(1x - 3y + 11) = 2x + 6y + 7$$

$$1. \quad 2(1x - 3y + 11) = 2x + 6y + 7$$

$$2x - 6y + 22 = 2x + 6y + 7$$

$$\cancel{2x} - \cancel{2x} - 6y - 6y + 22 - 7 = 0$$

$$-12y + 15 = 0 \quad | : (-3)$$

$$4y - 5 = 0$$

$$2. \quad -2(1x - 3y + 11) = 2x + 6y + 7$$

$$-2x + 6y - 22 = 2x + 6y + 7$$

$$-4x - 29 = 0 \quad | \cdot (-1)$$

$$4x + 29 = 0$$

Udžb. Str. 74 zad. 28.

$$y = x - 3$$

$$p \quad y = 7x - 11 \rightarrow 7x - y - 11 = 0$$

$$q \quad y = -x + 5 \rightarrow x + y - 5 = 0$$

$$d(T_1, p) = d(T_2, q)$$

$$\frac{|7x - y - 11|}{\sqrt{49 + 1}} = \frac{|x + y - 5|}{\sqrt{1 + 1}}$$

$$\frac{|7x - y - 11|}{5\sqrt{2}} = \frac{|x + y - 5|}{\sqrt{2}} \quad | \cdot 2\sqrt{2}$$

$$|7x - y - 11| = \pm 5|x + y - 5|$$

$$1. \quad 7x - y - 11 = 5(x + y - 5)$$

$$7x - y - 11 = 5x + 5y - 25$$

$$7x - (x - 3) - 11 = 5x + 5(x - 3) - 25$$

$$7x - x + 3 - 11 = 5x + 5x - 15 - 25$$

$$6x - 8 = 10x - 40$$

$$4x = 32$$

$$x = 8$$

$$y = 8 - 3 = 5$$

$$T_1(8, 5)$$

$$2. \quad 7x - y - 11 = -5(x + y - 5)$$

$$7x - y - 11 = -5x - 5y + 25$$

$$7x - (x - 3) - 11 = -5x - 5(x - 3) + 25$$

$$7x - x + 3 - 11 = -5x - 5x + 15 + 25$$

$$6x - 8 = -10x + 40$$

$$16x = 48$$

$$x = 3$$

$$y = 3 - 3 = 0$$

$$T_2(3, 0)$$

