

Zadatak 29. Težište trokuta ABC ishodište je koordinatnog sustava, stranica \overline{AB} leži na pravcu $x + y - 4 = 0$, a stranica \overline{AC} na pravcu $2x + y - 1 = 0$. Odredi jednadžbu stranice \overline{BC} .

Rješenje.

$$T(0, 0)$$

$$AB \dots x + y - 4 = 0, \quad y = -x + 4$$

$$AC \dots 2x + y - 1 = 0 \quad y = -2x + 1$$

$$A(x_1, -x_1 + 4)$$

$$B(x_2, -x_2 + 4)$$

$$C(x_3, -2x_3 + 1)$$

$$AB \cap AC = \{A\} \implies -x_1 + 4 = -2x_1 + 1$$

$$x_1 = -3$$

$$y_1 = 3 + 4$$

$$y_1 = 7, \quad A(-3, 7)$$

$$x_T = \frac{x_1 + x_2 + x_3}{3} \implies 0 = \frac{-3 + x_2 + x_3}{3} \quad / \cdot 3$$

$$y_T = \frac{y_1 + y_2 + y_3}{3} \implies 0 = \frac{7 - x_2 + 4 - 2x_3 + 1}{3} \quad / \cdot 3$$

$$\left. \begin{array}{l} 0 = x_2 + x_3 - 3 \\ 0 = -x_2 - 2x_3 + 12 \end{array} \right\} +$$

$$0 = -x_3 + 9$$

$$x_3 = 9$$

$$y_3 = -2 \cdot 9 + 1$$

$$y_3 = -17 \quad C(9, -17)$$

$$x_2 + 9 - 3 = 0$$

$$x_2 = -6$$

$$y_2 = 6 + 4$$

$$y_2 = 10, \quad B(-6, 10)$$

$$BC \dots y - y_1 = \frac{y_2 - y_1}{x_2 - x_1}(x - x_1)$$

$$y - 10 = \frac{-17 - 10}{9 + 6}(x + 6)$$

$$y - 10 = \frac{-27}{15}(x + 6)$$

$$y - 10 = \frac{-9}{5}x - \frac{54}{5} \quad / \cdot 5$$

$$5y - 50 = -9x - 54$$

$$BC \dots 9x + 5y + 4 = 0$$