Zadatak 8. Osnovica jednakokračnog trokuta leži na pravcu $2x - 5y + 1 = 0$, a jedan krak na pravcu $12x - y + 23 = 0$. Na kojem pravcu leži drugi krak ovog trokuta ako taj pravac prolazi točkom $T(3, 1)$?

Rješenje.

$$T(3, 1)$$
$$2x - 5y + 1 = 0$$
$$\underline{12x - y + 23 = 0}$$
$$5y = 2x + 1$$
$$\underline{y = 12x + 23}$$
$$y = \frac{2}{5}x + \frac{1}{5}$$
$$\underline{y = 12x + 23}$$
$$\operatorname{tg} \varphi = \left| \frac{\frac{2}{5} - 12}{1 + \frac{2}{5} \cdot 12} \right| = \left| \frac{-\frac{58}{5}}{\frac{29}{5}} \right| = 2$$

Neka je b' pravac na kojem leži drugi krak trokuta s koeficijentom smjera k tada vrijedi:

$$\operatorname{tg} \varphi = 2 \qquad\qquad |2 - 5k| = 2|5 + 2k|$$

$$\left| \frac{\frac{2}{5} - k}{1 + \frac{2}{5} \cdot k} \right| = 2 \qquad\qquad 2 - 5k < 0 \implies k > \frac{2}{5}$$

$$\left| \frac{\frac{2-5k}{5}}{\frac{5+2k}{5}} \right| = 2 \qquad\qquad 5 + 2k < 0 \implies k < -\frac{5}{2}$$

$$\left| \frac{2 - 5k}{5 + 2k} \right| = 2$$

$$\boxed{x \in \left\langle -\infty, -\frac{5}{2} \right\rangle \cup \left\langle \frac{2}{5}, ty \right\rangle} \qquad \boxed{x \in \left\langle -\frac{5}{2}, \frac{2}{5} \right\rangle}$$

$$-2 + 5k = 2(5 + 2k) \qquad\qquad 2 - 5k = 2(5 + 2k)$$
$$-2 + 5k = 10 + 4k \qquad\qquad 2 - 5k = 10 + 4k$$
$$k = 12 \;\; \text{(koeficijent od } b) \qquad\qquad 9k = -8$$
$$\text{(nije rješenje)} \qquad\qquad\qquad k = -\frac{8}{9}$$

$$T(3, 1)$$

$$y - 1 = -\frac{8}{9}(x - 3) \quad / \cdot 9$$

$$9y - 9 = -8x + 24$$

$$\boxed{8x + 9y - 33 = 0}$$