

Zadatak 19. Odredi koeficijent k tako da površina trokuta što ga pravac $(k+1)x+ky-18=0$ tvori s koordinatnim osima bude jednaka 27.

Rješenje.

$$\begin{aligned} (k+1)x + ky = 18 & \quad / : 18 \\ \frac{x}{\frac{18}{k+1}} + \frac{y}{\frac{18}{k}} &= 1 \\ \frac{|m \cdot n|}{2} &= P \\ \frac{\left| \frac{18}{k+1} \cdot \frac{18}{k} \right|}{2} &= 27 \end{aligned} \quad \begin{aligned} \frac{324 \cdot \left| \frac{1}{k+1} \cdot \frac{1}{k} \right|}{2} &= 27 \\ \left| \frac{1}{k+1} \cdot \frac{1}{k} \right| &= \frac{1}{6} \\ \frac{1}{|k \cdot (k+1)|} &= \frac{1}{6} \\ |k \cdot (k+1)| &= 6 \end{aligned} \quad (*)$$

1) $k \in \langle -1, 0 \rangle$

$$\begin{aligned} \text{Iz } (*) \quad -k(k+1) &= 6 \\ -k^2 - k - 6 &= 0 \\ k^2 + k + 6 &= 0 \\ k_{1,2} &= \frac{-1 \pm \sqrt{1-24}}{2} \quad (\text{nema rješenja}) \end{aligned}$$

2) $k \in \langle -\infty, -1 \rangle \cup \langle 0, \infty \rangle$

$$\begin{aligned} \text{Iz } (*) \quad k(k+1) &= 6 \\ k^2 + k - 6 &= 0 \\ k_{1,2} &= \frac{-1 \pm \sqrt{1+24}}{2} = \frac{-1 \pm 5}{2} \\ k_1 &= \frac{-1-5}{2} = -3 \implies p_1 \dots \frac{x}{-9} + \frac{y}{-6} = 1 \\ k_2 &= \frac{-1+5}{2} = 2 \implies p_2 \dots \frac{x}{6} + \frac{y}{9} = 1 \end{aligned}$$