

Zadatak 6. Odredi koeficijent m tako da pravac bude tangenta elipse:

$$1) \begin{cases} x + y = m, \\ x^2 + 4y^2 = 20; \end{cases} \quad 2) \begin{cases} x + 2y = m, \\ x^2 + 2y^2 = 12. \end{cases}$$

Rješenje.

1)

$$p \dots x + y = m \implies y = -x + m$$

$$E \dots x^2 + 4y^2 = 20 \quad / : 20$$

$$\frac{x^2}{20} + \frac{y^2}{5} = 1$$

Uvjet da je pravac p tangenta elipse:

$$l^2 = a^2k^2 + b^2$$

$$m^2 = 20 \cdot (-1)^2 + 5$$

$$m^2 = 25 \implies m = \pm 5$$

2)

$$p \dots x + 2y = m \implies y = -\frac{1}{2}x + \frac{m}{2}$$

$$E \dots x^2 + 2y^2 = 12 \quad / : 12$$

$$\frac{x^2}{12} + \frac{y^2}{6} = 1$$

Uvjet da je pravac p tangenta elipse:

$$l^2 = a^2k^2 + b^2$$

$$\left(\frac{m}{2}\right)^2 = 12 \cdot \left(-\frac{1}{2}\right)^2 + 6$$

$$\frac{m^2}{4} = 12 \cdot \frac{1}{4} + 6$$

$$\frac{m^2}{4} = 9 \quad / \cdot 4$$

$$m^2 = 36 \implies m = \pm 6$$