

Kolo2

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$$\frac{11}{2}x_1^2 + 7\sqrt{3}x_1x_2 + \frac{25}{2}x_2^2 - 32 = 0$$

$$M = \begin{bmatrix} \frac{11}{2} & \frac{7\sqrt{3}}{2} \\ \frac{7\sqrt{3}}{2} & \frac{25}{2} \end{bmatrix}$$

$$\begin{aligned} \det M &= \frac{11 \cdot 25}{4} - \frac{49 \cdot 3}{4} \\ &= \frac{275}{4} - \frac{147}{3} \\ &= 32 \implies \text{eliptyczny} \end{aligned}$$

$$\text{Wartości własne } M = \begin{vmatrix} \frac{11}{2} - \lambda & \frac{7\sqrt{3}}{2} \\ \frac{7\sqrt{3}}{2} & \frac{25}{2} - \lambda \end{vmatrix}$$

$$\begin{aligned} 0 &= \left(\frac{11}{2} - \lambda\right) \cdot \left(\frac{25}{2} - \lambda\right) - \frac{49 \cdot 3}{4} \\ &= \lambda^2 - \frac{36}{2}\lambda + 32 \end{aligned}$$

$$\delta = 324 - 128 = 136$$

$$\sqrt{\delta} = 14$$

$$\delta_1 = \frac{18 - 14}{2} = 2$$

$$\delta_2 = \frac{32}{2} = 16$$