

Linearna algebra a septembar 2008.

2. i 4. tok

1. Data je matrica

$$A = \begin{bmatrix} 1 & \lambda & -1 & 2 \\ 2 & -1 & \lambda & 5 \\ 1 & 10 & -6 & 1 \\ 3 & 0 & 0 & 7 \end{bmatrix} \in M_4(\mathbb{R}).$$

- a) U zavisnosti od parametra $\lambda \in \mathbb{R}$ odrediti rang matrice A .
b) Za $\lambda = 0$ odrediti inverz matrice A .

2. Izračunati determinanatu reda n :

$$\begin{vmatrix} 1 & 2 & 0 & 0 & 0 & \dots & 0 \\ 3 & 4 & 3 & 0 & 0 & \dots & 0 \\ 0 & 2 & 5 & 3 & 0 & \dots & 0 \\ 0 & 0 & 2 & 5 & 3 & \dots & 0 \\ \vdots & \vdots & \vdots & \ddots & \ddots & \ddots & \vdots \\ 0 & 0 & 0 & 0 & \dots & 5 & 3 \\ 0 & 0 & 0 & 0 & \dots & 2 & 5 \end{vmatrix}.$$

3. Rešiti sistem jednačina u zavisnosti od realnog parametra α :

$$\begin{aligned} (3\alpha + 2)x + (2\alpha + 3)y + (2\alpha + 3)z &= 5 \\ (2\alpha + 1)x + (\alpha + 2)y + (\alpha + 2)z &= 3 \\ (\alpha + 1)x + 2y + (\alpha + 1)z &= 2. \end{aligned}$$