

Naloge za utrjevanje iz Matematike (GIK, NTO)

Če v matriki večkratnik kake vrstice prištejemo k drugi vrstici, se determinanta matrike ne spremeni. Če zamenjamo dve vrstici, se determinanta pomnoži z (-1) . Če kako vrstico matrike A delimo (množimo) s številom λ , se determinanta matrike A deli (množi) z λ . npr:

(a)

$$A = \begin{bmatrix} 1 & -1 & 7 \\ 0 & 6 & 8 \\ 1 & -1 & 2 \end{bmatrix}$$

Če drugo vrstico matrike A delimo z 2 dobimo

$$\frac{1}{2}\det A = \begin{vmatrix} 1 & -1 & 7 \\ 0 & 3 & 4 \\ 1 & -1 & 2 \end{vmatrix}.$$

Torej

$$\begin{vmatrix} 1 & -1 & 7 \\ 0 & 6 & 8 \\ 1 & -1 & 2 \end{vmatrix} = 2 \begin{vmatrix} 1 & -1 & 7 \\ 0 & 3 & 4 \\ 1 & -1 & 2 \end{vmatrix} = 2 \begin{vmatrix} 1 & -1 & 7 \\ 0 & 3 & 4 \\ 0 & 0 & -5 \end{vmatrix} = 2(3)(-5) = -30.$$

(b)

$$\begin{aligned} \begin{vmatrix} 4 & -2 & 6 \\ 1 & 1 & 2 \\ 1 & 0 & 2 \end{vmatrix} &= 2 \begin{vmatrix} 2 & -1 & 3 \\ 1 & 1 & 2 \\ 1 & 0 & 2 \end{vmatrix} = -2 \begin{vmatrix} 1 & 1 & 2 \\ 2 & -1 & 3 \\ 1 & 0 & 2 \end{vmatrix} = -2 \begin{vmatrix} 1 & 1 & 2 \\ 0 & -3 & -1 \\ 0 & -1 & 0 \end{vmatrix} = \\ &= 2 \begin{vmatrix} 1 & 1 & 2 \\ 0 & -1 & 0 \\ 0 & -3 & -1 \end{vmatrix} = -2 \begin{vmatrix} 1 & 1 & 2 \\ 0 & 1 & 0 \\ 0 & -3 & -1 \end{vmatrix} = -2 \begin{vmatrix} 1 & 1 & 2 \\ 0 & 1 & 0 \\ 0 & 0 & -1 \end{vmatrix} = (-2)(1)(1)(-1) = 2. \end{aligned}$$

(c)

$$\begin{aligned} \begin{vmatrix} 2 & 1 & 3 \\ 3 & 3 & -1 \\ 1 & -1 & 7 \end{vmatrix} &= - \begin{vmatrix} 1 & -1 & 7 \\ 3 & 3 & -1 \\ 2 & 1 & 3 \end{vmatrix} = - \begin{vmatrix} 1 & -1 & 7 \\ 0 & 6 & -22 \\ 0 & 3 & -11 \end{vmatrix} = \\ &= -2 \begin{vmatrix} 1 & -1 & 7 \\ 0 & 3 & -11 \\ 0 & 3 & -11 \end{vmatrix} = -2 \begin{vmatrix} 1 & -1 & 7 \\ 0 & 3 & -11 \\ 0 & 0 & 0 \end{vmatrix} = (-2)1(3)(0) = 0. \end{aligned}$$