



IZRAČUNAVANJE VRIJEDNOSTI DETERMINANTE

Zadatak 1.

Izračunajte sljedeće determinante:

a)

$$\begin{vmatrix} 1 & 1 & 1 & 1 \\ -1 & 0 & 1 & 2 \\ 1 & 0 & 1 & 4 \\ -1 & 0 & 1 & 8 \end{vmatrix},$$

b)

$$\begin{vmatrix} 1 & -2 & 4 & -8 \\ 1 & -1 & 1 & -1 \\ 1 & 1 & 1 & 1 \\ 1 & 3 & 9 & 27 \end{vmatrix}.$$





Zadatak 2.

Izračunajte $\det A$ ako je $A = B^2$ pri čemu je B

$$B = \begin{bmatrix} 1 & a & a^2 \\ 1 & b & b^2 \\ 1 & c & c^2 \end{bmatrix}.$$





Zadatak 3.

Pomoću Gramove matrice provjerite jesu li zadani vektori linearno zavisni:

a) $\vec{a} = 2\vec{i} + \vec{j} + \vec{k}$, $\vec{b} = -\vec{i} - \vec{j} + \vec{k}$, $\vec{c} = \vec{i} + 2\vec{k}$,

b) $\vec{a} = 2\vec{i} - 3\vec{j} + \vec{k}$, $\vec{b} = \vec{i} + \vec{j} - 3\vec{k}$, $\vec{c} = \vec{i} - 3\vec{j} + \vec{k}$.





Kako izračunati vrijednost determinante n -tog reda?

Zadatak 1.

Odredite vrijednosti determinanti n -tog reda

$$a) \begin{vmatrix} 2 & 4 & 6 & \cdots & 2n \\ -2 & 0 & 6 & \cdots & 2n \\ -2 & -4 & 0 & \cdots & 2n \\ & & & \cdots & \\ -2 & -4 & -6 & \cdots & 0 \end{vmatrix}, \quad b) \begin{vmatrix} \alpha & 0 & 0 & \cdots & 0 & \beta \\ \beta & \alpha & 0 & \cdots & 0 & 0 \\ 0 & \beta & \alpha & \cdots & 0 & 0 \\ & & & \cdots & & \\ 0 & 0 & 0 & \cdots & \alpha & 0 \\ 0 & 0 & 0 & \cdots & \beta & \alpha \end{vmatrix}.$$





Zadatak 2.

Odredite vrijednosti determinanti n-tog reda:

a)

$$\begin{vmatrix} 0 & 1 & 1 & \dots & 1 \\ 1 & a_1 & 0 & \dots & 0 \\ 1 & 0 & a_2 & \dots & 0 \\ \vdots & \vdots & \vdots & \ddots & \vdots \\ 1 & 0 & 0 & \dots & a_{n-1} \end{vmatrix},$$





b)

$$\begin{vmatrix} -1 & 2 & 2 & \dots & 2 \\ 2 & -1 & 2 & \dots & 2 \\ 2 & 2 & -1 & \dots & 2 \\ \vdots & \vdots & \vdots & \ddots & \vdots \\ 2 & 2 & 2 & \dots & -1 \end{vmatrix}.$$





Zadatak 3.

Odredite vrijednosti determinanti n-tog reda:

a)

$$\begin{vmatrix}
 x & a & a & \dots & a & a \\
 -a & x & a & \dots & a & a \\
 -a & -a & x & \dots & a & a \\
 \vdots & \vdots & \vdots & \ddots & \vdots & \vdots \\
 -a & -a & -a & \dots & x & a \\
 -a & -a & -a & \dots & -a & x
 \end{vmatrix},$$





b)

$$\left| \begin{array}{cccccc} a_1 & a_2 & a_3 & \dots & a_{n-1} & a_n \\ -x & x & 0 & \dots & 0 & 0 \\ 0 & -x & x & \dots & 0 & 0 \\ \vdots & \vdots & \vdots & \ddots & \vdots & \vdots \\ 0 & 0 & 0 & \dots & x & 0 \\ 0 & 0 & 0 & \dots & -x & x \end{array} \right|.$$

