DEFINICISA DETERMINANTA

Sto je determinanta? - determinanta : skalar pridružen makoj kur matrici oznaka: det (A) Motivaçãa: vesa sa linearnim sustavima. ax + by = e motodo supomih * prvu jedu ponum sa d,

Cx + dy = f * Lebijanaha * a drugu s - b i 2 mojimo az. (ad-bc)x = ed-bf = x $(ad-bc)y = af - ce = > \frac{af - ce}{ad - bc} = y$ primitélyemo da ra projnit i Massimit determinante $x = \frac{\begin{vmatrix} e & b \\ f & a \end{vmatrix}}{\begin{vmatrix} a & b \\ c & d \end{vmatrix}}$ y a b c d

 $= Q_{11} \left(q_{12} \cdot a_{33} - a_{23} \cdot a_{32} \right) - Q_{12} \left(a_{21} a_{33} - a_{13} \cdot a_{31} \right) + Q_{13} \left(a_{21} a_{32} - a_{23} \cdot a_{31} \right)$

Indulations solvainon ma dimensia matrice

on = 1:
$$A = \begin{bmatrix} a_{11} \end{bmatrix}$$
, $det A = a_n$

on = 2: $A = \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix}$, $det A = \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix}$; $det A = \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix}$; $det A = \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix}$; $det A = \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix}$; $det A = \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix}$; $det A = \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix}$; $det A = \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix}$; $det A = \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix}$; $det A = \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix}$; $det A = \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix}$; $det A = \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix}$; $det A = \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix}$; $det A = \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix}$; $det A = \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix}$; $det A = \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix}$; $det A = \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix}$; $det A = \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix}$; $det A = \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix}$; $det A = \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix}$; $det A = \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix}$; $det A = \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix}$; $det A = \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix}$; $det A = \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix}$; $det A = \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix}$; $det A = \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix}$; $det A = \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{23} \end{bmatrix}$; $det A = \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix}$; $det A = \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix}$; $det A = \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix}$; $det A = \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix}$; $det A = \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix}$; $det A = \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix}$; $det A = \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix}$; $det A = \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix}$; $det A = \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix}$; $det A = \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix}$; $det A = \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix}$; $det A = \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix}$; $det A = \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix}$

Primyer Q.)

1 2 = 1.4 - 2.3 = -2

1 1 1 - 3 - 1 3 = 0

$$\begin{vmatrix} 2 & -1 & 3 \\ 3 & 1 & 5 \\ -1 & 2 & -3 \end{vmatrix} = 2 \cdot \begin{vmatrix} 1 & 5 \\ 2 - 3 \end{vmatrix} - (-1) \begin{vmatrix} 3 & 5 \\ -1 & -3 \end{vmatrix} + 3 \begin{vmatrix} 3 & 1 \\ -1 & 2 \end{vmatrix}$$

$$= 2 \cdot (-3 - 10) + 1 (3 \cdot (-3) + 5) + 3 (6 + 1)$$

$$= -26 - (4 + 2) = -9$$
Laplaceov ravoroj determinante

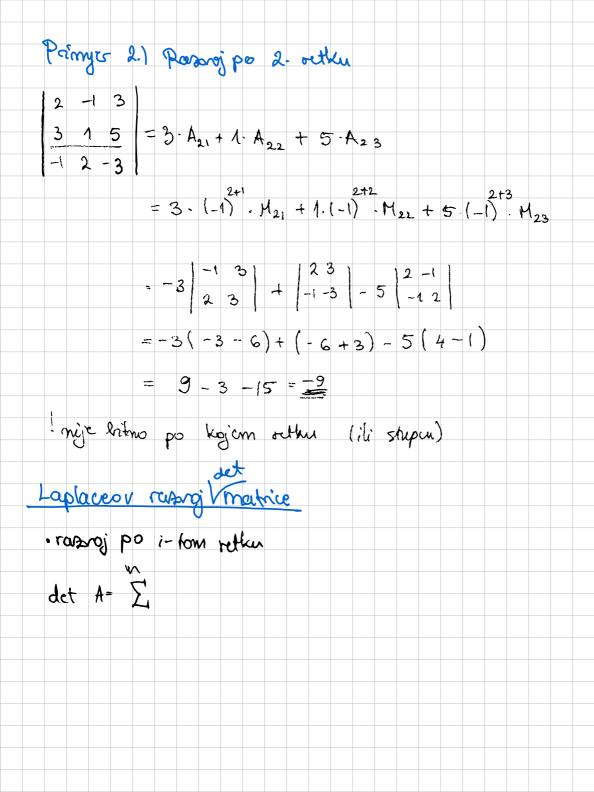
Minore: Mij minorta elementa aj

$$= \frac{1}{2} \cdot (-3 - 10) + 1 (3 \cdot (-3) + 5) + 3 (6 + 1)$$

$$= -26 - (4 + 2) = -9$$

$$= -9$$
Minore: Mij minorta elementa aj
$$= \frac{1}{2} \cdot (-3) + \frac{1}{$$

Primer (.)



SVOUSTVA DETERMINANTA

1.) Ako matrica A ima reelak (shipac) sastavljen od samili mila, onda je det A=0.

Dokas: $det A = \sum_{j=1}^{n} (-1)^{i+j} \quad a_{j} M_{ij} = 0$

2.) Determinanta trobutasse matrice jednala je umnostu elemenata Ma dijazonali.

Dokaz: BSO (vez nmayeya opcenihoshi)

 $= Q_{11} \begin{pmatrix} Q_{22} & Q_{33} & Q_{34} \\ Q_{22} & Q_{44} \end{pmatrix} = Q_{11} Q_{22} Q_{33} Q_{44} + 0$ $= Q_{11} Q_{22} Q_{33} Q_{44} + 0$

3.) Ako matrica A ima 2 jeduaka retka (stupca) ouda je det A =0. MAT. IND. BSO dokarsyemo samo rethe $A = \begin{bmatrix} a & b \\ a & b \end{bmatrix}, det = a \cdot b - a \cdot b = 0 \quad \text{if}$ il prespostavla Jurduja urzidi za me det reda n. iii koran Neka je A € Mun s dva jednaka refka (i ± 1, j ± 1) razinjena det A por bilo kojem od preostalen redak (k±1, k±i,j) $\det A = \sum_{\ell=1}^{n} (-1)^{k+\ell} \alpha_{k\ell} = 0 \text{ w}$ Determinanta meet reda n ĕyia nu obra netla ista. 4.) Transponirayen mechnice vijidnost det-re ne my cy à. det H= det AT

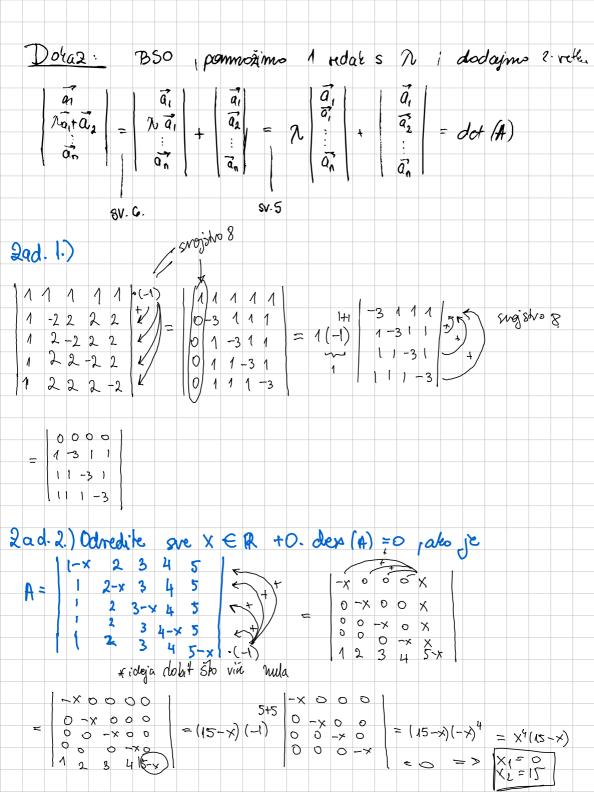
(5) Det se množi skalarom tako da se jedau (bilo koji) nježim redak (shupac) množi skálanom. Dolaz:

A je mat dehvena iz mat. A t.d.j. i-i redak mat. A pemmožen s x.

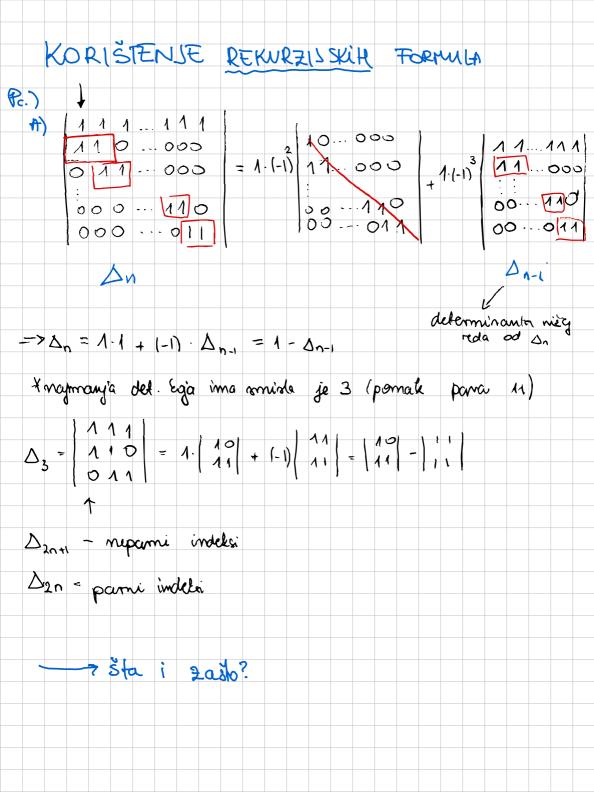
6.) Rastave li se mi Clementi nelez retra (stupca) mat.
na zhroj dvaju elemenata, onda je det. jednaka
zhroju dvaju odg. det erminanti

(7) -> 2a ujega nam trobojn svojstro 3 i 6.

F.) Mes samijenimo dua retha retha matrice, tada det. Dolaz: ains det inna dra jedhała retta, ouc je jednaka muli $\begin{vmatrix} \vec{q}_i \\ \vec{q}_j \end{vmatrix} = \begin{vmatrix} \vec{q}_i \\ \vec{q}_i \end{vmatrix} = \begin{vmatrix} \vec{q}_i \\ \vec{q}_j \end{vmatrix} = \begin{vmatrix} det \\ \vec{q}_j \end{vmatrix}$ 3. Als retem rether matrice dodams nehi drugi redak (rhysac)
pomnostu skalarom, vrijednost det se neće promajeniti. Nap: racinnauje det pomoću Laplaceous rasogiq za mat reda nz 4 je mutotopan posao. Zato za rač. mat višeg reda kocistimo namedeno svojstva.



2ad. 2)		2			
7 1 0 0					
3 7 2 0	2				
3 × 2 0 0 2 × 3 0 0 4 ×					
10014					
			•		



MIL. 4	4.	.1.	٨	.L (2)	- ~	1.+ (A)		
rwh w	okaz w	(4)	O	CT (A)	_ X	der (+)		
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Preipo:	dantea:	da m	ndi w	r ax	alim	redovi	ma	