

## Отсканированные документы

№1. Векторы в минимиро алгебре

$$N^1 \quad (5E)^{-1}$$

$$5E = \begin{pmatrix} 5 & 0 & 0 & 0 \\ 0 & 5 & 0 & 0 \\ 0 & 0 & 5 & 0 \\ 0 & 0 & 0 & 5 \end{pmatrix} \cdot \begin{pmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{pmatrix} = \begin{pmatrix} 5 & 0 & 0 & 0 \\ 0 & 5 & 0 & 0 \\ 0 & 0 & 5 & 0 \\ 0 & 0 & 0 & 5 \end{pmatrix} \quad (5E)^{-1} = \begin{pmatrix} 0.2 & 0 & 0 & 0 \\ 0 & 0.2 & 0 & 0 \\ 0 & 0 & 0.2 & 0 \\ 0 & 0 & 0 & 0.2 \end{pmatrix}$$

N2.  $\Delta_n$ ?

$$A = \begin{pmatrix} 1 & 2 & 3 \\ 4 & 0 & 6 \\ 7 & 8 & 9 \end{pmatrix} \quad \Delta_n = 1 \cdot 0 \cdot 9 + 2 \cdot 6 \cdot 7 + 4 \cdot 8 \cdot 3 - 3 \cdot 0 \cdot 7 - 4 \cdot 2 \cdot 9 - 1 \cdot 6 \cdot 8 =$$

$$\odot 0 + 84 + 96 - 0 - 72 - 48 - 60 \quad \text{ответ: } 60$$

N3.  $(A)^{-1}$

$$A = \begin{pmatrix} 1 & 2 & 3 \\ 4 & 0 & 6 \\ 7 & 8 & 9 \end{pmatrix} \quad \Delta > 0$$

$$M_{11} = \begin{vmatrix} 0 & 6 \\ 8 & 9 \end{vmatrix} = -48 \quad M_{12} = \begin{vmatrix} 4 & 6 \\ 7 & 9 \end{vmatrix} = -6 \quad M_{13} = \begin{vmatrix} 4 & 0 \\ 7 & 8 \end{vmatrix} = 32$$

$$M_{21} = \begin{vmatrix} 2 & 3 \\ 8 & 9 \end{vmatrix} = -6 \quad M_{22} = \begin{vmatrix} 1 & 3 \\ 7 & 9 \end{vmatrix} = -6 \quad M_{23} = \begin{vmatrix} 1 & 2 \\ 7 & 8 \end{vmatrix} = -6$$

$$M_{31} = \begin{vmatrix} 2 & 3 \\ 0 & 6 \end{vmatrix} = 12 \quad M_{32} = \begin{vmatrix} 1 & 3 \\ 4 & 6 \end{vmatrix} = -6 \quad M_{33} = \begin{vmatrix} 1 & 2 \\ 4 & 0 \end{vmatrix} = -8$$

$$A_{11} = (-1)^{1+1} M_{11} = -48 \quad A_{12} = (-1)^{1+2} M_{12} = 6 \quad A_{13} = (-1)^{1+3} M_{13} = 32$$

$$A_{21} = (-1)^{2+1} M_{21} = 6 \quad A_{22} = (-1)^{2+2} M_{22} = -6 \quad A_{23} = (-1)^{2+3} M_{23} = 6$$

$$A_{31} = (-1)^{3+1} M_{31} = -12 \quad A_{32} = (-1)^{3+2} M_{32} = 6 \quad A_{33} = (-1)^{3+3} M_{33} = -8$$

$$\text{матрица адж. дет. } A^{-1} = \begin{pmatrix} -48 & 6 & 32 \\ 6 & -6 & 6 \\ -12 & 6 & -8 \end{pmatrix} \cdot \frac{1}{\Delta} \quad (C^*)^T = \begin{pmatrix} -48 & 6 & 32 \\ 6 & -6 & 6 \\ -12 & 6 & -8 \end{pmatrix}$$

$$\frac{(C^*)^T}{\Delta} = \begin{pmatrix} -\frac{48}{60} & \frac{6}{60} & \frac{32}{60} \\ \frac{6}{60} & \frac{-6}{60} & \frac{6}{60} \\ \frac{-12}{60} & \frac{6}{60} & \frac{-8}{60} \end{pmatrix} = \begin{pmatrix} -0.8 & 0.1 & 0.533 \\ 0.1 & -0.1 & 0.1 \\ -0.2 & 0.1 & -0.133 \end{pmatrix} = (A)^{-1}$$

N3.2

Пример матрицы  $\text{rang} = 1 \quad m \times n = 4 \times 4$

$$\begin{pmatrix} 1 & 1 & 1 & 1 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \end{pmatrix} \quad \text{или} \quad \begin{pmatrix} 1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \end{pmatrix}$$

N4. Скалярное произведение  $(1, 5)$  и  $(2, 8)$

$$\bar{a} \cdot \bar{b} = 1 \cdot 2 + 5 \cdot 8 = 42 \quad \text{ответ: } 42$$

N5. Векторы

4, 5, 6

$\bar{a} \cdot (\bar{b})$

ответ