

1.

$$\begin{pmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{pmatrix}$$

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ \frac{1}{2} & 1 & 0 & 0 \\ \frac{7}{4} & \frac{79}{2} & 1 & 0 \\ 0 & -2 & -\frac{2}{19} & 1 \end{bmatrix}, U = \begin{bmatrix} -4 & -9 & 6 & 8 \\ 0 & \frac{1}{2} & -1 & 1 \\ 0 & 0 & 19 & -\frac{119}{2} \\ 0 & 0 & 0 & -\frac{24}{19} \end{bmatrix}$$

3.

$$\begin{pmatrix} 17 & -15 & 17 \\ -15 & -13 & -3 \\ 5 & 10 & -12 \end{pmatrix}$$

4.

$$\begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 \\ 2 & 5 & 1 & 3 & 6 & 4 \end{pmatrix}; \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 \\ 2 & 5 & 1 & 3 & 6 & 4 \end{pmatrix}$$

5.

$$\sigma = (1, 5, 7)(2, 3, 9, 8)(4, 6), \text{ord} = 12, \sigma^{-823} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 7 & 3 & 9 & 6 & 1 & 4 & 5 & 2 & 8 \end{pmatrix} = (1, 7, 5)(2, 3, 9, 8)(4, 6)$$

6. Id; (3, 4, 7); (3, 7, 4); (1, 2, 5, 6);

(1, 2, 5, 6) (3, 4, 7); (1, 2, 5, 6) (3, 7, 4); (1, 5) (2, 6); (1, 5) (2, 6) (3, 4, 7); (1, 5) (2, 6) (3, 7, 4);

(1, 6, 5, 2); (1, 6, 5, 2) (3, 4, 7); (1, 6, 5, 2) (3, 7, 4);

$$7. \frac{32(-32)^n}{77} + \frac{45 \cdot 45^n}{77}$$

$$8. 3 + 4 * x + 0 * x^2 + 2 * x^3 + 1 * x^4$$

9. При  $\lambda = -9$

10. Определитель:  $685 - 105\lambda$ , при  $\lambda = [137/21]$  ранг равен 3, иначе 4