

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 3 & 1 & 0 & 0 \\ 1 & \frac{8}{9} & 1 & 0 \\ -\frac{9}{2} & -\frac{1}{6} & \frac{213}{16} & 1 \end{bmatrix}, U = \begin{bmatrix} 2 & 1 & 7 & 6 \\ 0 & -9 & -12 & -19 \\ 0 & 0 & \frac{8}{3} & \frac{143}{9} \\ 0 & 0 & 0 & -\frac{2891}{16} \end{bmatrix}$$

3.

$$\begin{pmatrix} 11 & -1 & -6 \\ 12 & 7 & -6 \\ -19 & 9 & 8 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 9, 4)(2, 6, 8)(3, 5, 7), \text{ord} = 3, \sigma^{-743} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 9 & 6 & 5 & 1 & 7 & 8 & 3 & 2 & 4 \end{pmatrix} = (1, 9, 4)(2, 6, 8)(3, 5, 7)$$

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

7. $-3 \cdot 54^n + 4 \cdot 72^n$

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

9. При $\lambda = -8$

10. Определитель: $-4\lambda - 39$, при $\lambda = [-39/4]$ ранг равен 3, иначе 4