

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ \frac{7}{4} & 1 & 0 & 0 \\ \frac{3}{4} & \frac{1}{2} & 1 & 0 \\ \frac{3}{2} & \frac{7}{4} & -\frac{31}{82} & 1 \end{bmatrix}, U = \begin{bmatrix} 4 & 0 & 9 & -5 \\ 0 & -4 & -\frac{31}{4} & -\frac{5}{4} \\ 0 & 0 & \frac{41}{8} & \frac{107}{8} \\ 0 & 0 & 0 & \frac{1045}{82} \end{bmatrix}$$

3.

$$\begin{pmatrix} -20 & 4 & -20 \\ 8 & -9 & -6 \\ 0 & -2 & 16 \end{pmatrix}$$

4.

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

5.

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

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

$$7. \frac{2(-6)^n}{5} + \frac{3 \cdot 9^n}{5}$$

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

9. При $\lambda = 6$

10. Определитель: $66\lambda + 90$, при $\lambda = [-15/11]$ ранг равен 3, иначе 4