

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 1 & 1 & 0 & 0 \\ \frac{3}{2} & \frac{41}{24} & 1 & 0 \\ 1 & \frac{1}{12} & \frac{1}{6} & 1 \end{bmatrix}, U = \begin{bmatrix} 6 & 9 & 8 & -9 \\ 0 & -12 & 0 & 10 \\ 0 & 0 & -12 & \frac{5}{12} \\ 0 & 0 & 0 & \frac{1015}{72} \end{bmatrix}$$

3.

$$\begin{pmatrix} -2 & 16 & -1 \\ -16 & 10 & -16 \\ 5 & -3 & 3 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 5, 8, 2, 6, 4, 3)(7, 9), ord = 14, \sigma^{-743} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 3 & 8 & 4 & 6 & 1 & 2 & 9 & 5 & 7 \end{pmatrix} = (1, 3, 4, 6, 2, 8, 5)(7, 9)$$

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

$$7. -\frac{20(-20)^n}{29} + \frac{49(-49)^n}{29}$$

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

9. При $\lambda = 1$

10. Определитель: $98\lambda - 406$, при $\lambda = [29/7]$ ранг равен 3, иначе 4