

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & \frac{3}{4} & 1 & 0 \\ \frac{3}{5} & \frac{19}{40} & \frac{353}{10} & 1 \end{bmatrix}, U = \begin{bmatrix} 5 & -8 & 9 & -5 \\ 0 & 8 & 3 & -4 \\ 0 & 0 & -\frac{1}{4} & -6 \\ 0 & 0 & 0 & \frac{2257}{10} \end{bmatrix}$$

3.

$$\begin{pmatrix} 17 & 16 & 17 \\ 5 & 13 & 8 \\ 16 & 7 & -13 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 5, 7, 3, 9, 4, 2)(6, 8), \text{ord} = 14, \sigma^{-727} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 5 & 1 & 9 & 2 & 7 & 8 & 3 & 6 & 4 \end{pmatrix} = (1, 5, 7, 3, 9, 4, 2)(6, 8)$$

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

$$7. -\frac{16(-32)^n}{19} + \frac{35(-70)^n}{19}$$

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

9. При $\lambda = 8$

10. Определитель: $70 - 40\lambda$, при $\lambda = [7/4]$ ранг равен 3, иначе 4