

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -\frac{9}{2} & 1 & 0 & 0 \\ 1 & 0 & 1 & 0 \\ 2 & -\frac{7}{36} & \frac{65}{192} & 1 \end{bmatrix}, U = \begin{bmatrix} 2 & 8 & 9 & -3 \\ 0 & 36 & \frac{75}{2} & -\frac{47}{2} \\ 0 & 0 & -8 & 11 \\ 0 & 0 & 0 & -\frac{2473}{576} \end{bmatrix}$$

3.

$$\begin{pmatrix} -10 & 3 & 1 \\ -19 & -2 & -10 \\ -11 & 11 & 4 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 7, 2, 4, 6)(3, 9, 5, 8), ord = 20, \sigma^{-727} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 4 & 1 & 9 & 7 & 8 & 2 & 6 & 3 & 5 \end{pmatrix} = (1, 4, 7, 6, 2)(3, 9, 5, 8)$$

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

7. брак

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

9. При $\lambda = 0$

10. Определитель: $160\lambda - 961$, при $\lambda = [961/160]$ ранг равен 3, иначе 4