

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 1 & 1 & 0 & 0 \\ \frac{8}{3} & \frac{31}{18} & 1 & 0 \\ 0 & -\frac{4}{3} & 10 & 1 \end{bmatrix}, U = \begin{bmatrix} 3 & 2 & 1 & -9 \\ 0 & -6 & -3 & 11 \\ 0 & 0 & -\frac{1}{2} & \frac{73}{18} \\ 0 & 0 & 0 & -\frac{170}{9} \end{bmatrix}$$

3.

$$\begin{pmatrix} 8 & -2 & 2 \\ 13 & -15 & 15 \\ 18 & 1 & 14 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 6, 3, 8, 7, 2)(4, 5, 9), \text{ord} = 6, \sigma^{-719} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 6 & 1 & 8 & 5 & 9 & 3 & 2 & 7 & 4 \end{pmatrix} = (1, 6, 3, 8, 7, 2)(4, 5, 9)$$

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

7. брак

$$8. -2 + 0 * x + 1 * x^2 + -3 * x^3 + 3 * x^4$$

9. При $\lambda = 1$

10. Определитель: $19\lambda - 96$, при $\lambda = [96/19]$ ранг равен 3, иначе 4