

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ \frac{1}{2} & 1 & 0 & 0 \\ \frac{5}{2} & -\frac{55}{9} & 1 & 0 \\ \frac{1}{2} & \frac{5}{9} & -\frac{5}{37} & 1 \end{bmatrix}, U = \begin{bmatrix} -2 & 7 & -10 & -10 \\ 0 & \frac{9}{2} & 10 & 10 \\ 0 & 0 & \frac{703}{9} & \frac{820}{9} \\ 0 & 0 & 0 & \frac{694}{37} \end{bmatrix}$$

3.

$$\begin{pmatrix} -18 & -7 & -9 \\ -5 & 19 & 14 \\ -11 & -20 & -20 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 4)(2, 9)(3, 5, 6, 7, 8), \text{ord} = 10, \sigma^{-719} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 4 & 9 & 5 & 1 & 6 & 7 & 8 & 3 & 2 \end{pmatrix} = (1, 4)(2, 9)(3, 5, 6, 7, 8)$$

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

$$7. \frac{5(-5)^n}{11} + \frac{6 \cdot 6^n}{11}$$

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

9. При $\lambda = -3$

10. Определитель: $408 - 150\lambda$, при $\lambda = [68/25]$ ранг равен 3, иначе 4