

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ -1 & \frac{1}{2} & 1 & 0 \\ \frac{8}{9} & 2 & \frac{92}{15} & 1 \end{bmatrix}, U = \begin{bmatrix} -9 & 0 & 3 & -8 \\ 0 & -2 & -7 & 8 \\ 0 & 0 & \frac{5}{2} & -15 \\ 0 & 0 & 0 & \frac{811}{9} \end{bmatrix}$$

3.

$$\begin{pmatrix} 6 & 18 & 13 \\ -8 & 15 & -8 \\ -17 & -18 & 18 \end{pmatrix}$$

4.

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

5.

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

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

$$7. \frac{35(-35)^n}{67} + \frac{32 \cdot 32^n}{67}$$

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

9. При $\lambda = -8$

10. Определитель: $434 - 5\lambda$, при $\lambda = [434/5]$ ранг равен 3, иначе 4