

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -7 & 1 & 0 & 0 \\ -6 & \frac{31}{28} & 1 & 0 \\ -4 & \frac{17}{28} & -\frac{149}{201} & 1 \end{bmatrix}, U = \begin{bmatrix} -1 & 5 & 5 & 5 \\ 0 & 28 & 39 & 30 \\ 0 & 0 & -\frac{201}{28} & -\frac{185}{14} \\ 0 & 0 & 0 & -\frac{1007}{201} \end{bmatrix}$$

3.

$$\begin{pmatrix} -4 & -10 & -9 \\ -6 & 17 & -9 \\ 16 & 7 & -6 \end{pmatrix}$$

4.

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

5.

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

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

7. $-4(-16)^n + 5(-20)^n$

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

9. При $\lambda = -9$

10. Определитель: $24\lambda - 600$, при $\lambda = [25]$ ранг равен 3, иначе 4