

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -4 & 1 & 0 & 0 \\ -5 & \frac{13}{14} & 1 & 0 \\ 1 & -\frac{1}{2} & \frac{77}{141} & 1 \end{bmatrix}, U = \begin{bmatrix} -1 & -3 & -8 & -2 \\ 0 & -14 & -29 & -13 \\ 0 & 0 & -\frac{141}{14} & \frac{57}{14} \\ 0 & 0 & 0 & \frac{107}{47} \end{bmatrix}$$

3.

$$\begin{pmatrix} -12 & -9 & 16 \\ -18 & 8 & 0 \\ 18 & -12 & -5 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 3, 7)(2, 8, 9, 5, 4, 6), \text{ord} = 6, \sigma^{-827} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 3 & 8 & 7 & 6 & 4 & 2 & 1 & 9 & 5 \end{pmatrix} = (1, 3, 7)(2, 8, 9, 5, 4, 6)$$

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

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

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

7. $-2(-16)^n + 3(-24)^n$

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

9. При $\lambda = -7$

10. Определитель: 4, при $\lambda = \square$ ранг равен 3, иначе 4