

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -\frac{1}{8} & 1 & 0 & 0 \\ -\frac{1}{2} & -1 & 1 & 0 \\ 0 & -1 & \frac{17}{8} & 1 \end{bmatrix}, U = \begin{bmatrix} -8 & 0 & 0 & 2 \\ 0 & -7 & -9 & -\frac{27}{4} \\ 0 & 0 & -8 & \frac{5}{4} \\ 0 & 0 & 0 & -\frac{205}{32} \end{bmatrix}$$

3.

$$\begin{pmatrix} 7 & -4 & -7 \\ 15 & -8 & 11 \\ -4 & 12 & -15 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 6, 7, 3)(2, 4, 8, 9, 5), ord = 20, \sigma^{-827} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 6 & 9 & 1 & 5 & 8 & 7 & 3 & 2 & 4 \end{pmatrix} = (1, 6, 7, 3)(2, 9, 4, 5, 8)$$

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

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

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

7. брак

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

9. При $\lambda = 8$

10. Определитель: $6\lambda - 81$, при $\lambda = [27/2]$ ранг равен 3, иначе 4