

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -9 & 1 & 0 & 0 \\ 0 & \frac{1}{22} & 1 & 0 \\ 4 & -\frac{17}{22} & \frac{375}{97} & 1 \end{bmatrix}, U = \begin{bmatrix} -1 & -2 & 9 & 4 \\ 0 & -22 & 79 & 31 \\ 0 & 0 & \frac{97}{22} & -\frac{141}{22} \\ 0 & 0 & 0 & \frac{3951}{97} \end{bmatrix}$$

3.

$$\begin{pmatrix} -5 & 18 & 2 \\ -2 & -19 & -5 \\ -4 & 0 & -19 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 7, 8, 4, 2)(3, 6)(5, 9), ord = 10, \sigma^{-811} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 2 & 4 & 6 & 8 & 9 & 3 & 1 & 7 & 5 \end{pmatrix} = (1, 2, 4, 8, 7)(3, 6)(5, 9)$$

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

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

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

7. брак

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

9. При  $\lambda = 2$

10. Определитель:  $876 - 144\lambda$ , при  $\lambda = [73/12]$  ранг равен 3, иначе 4