

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -8 & 1 & 0 & 0 \\ -2 & \frac{4}{31} & 1 & 0 \\ -8 & \frac{30}{31} & -\frac{65}{43} & 1 \end{bmatrix}, U = \begin{bmatrix} -1 & -3 & 6 & -5 \\ 0 & -31 & 50 & -37 \\ 0 & 0 & \frac{172}{31} & -\frac{255}{31} \\ 0 & 0 & 0 & -\frac{887}{43} \end{bmatrix}$$

3.

$$\begin{pmatrix} 1 & 11 & 5 \\ 4 & 17 & -3 \\ 2 & 10 & -10 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 6, 7, 2)(3, 8, 5, 9, 4), \text{ord} = 20, \sigma^{-719} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 6 & 1 & 8 & 3 & 9 & 7 & 2 & 5 & 4 \end{pmatrix} = (1, 6, 7, 2)(3, 8, 5, 9, 4)$$

6. Id; (4, 5); (2, 4) (5, 6); (2, 4, 6, 5);

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

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

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

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

7. брак

$$8. 2 + 2*x + 0*x^2 + 1*x^3 + -2*x^4$$

9. При $\lambda = -9$

10. Определитель: $8\lambda - 204$, при $\lambda = [51/2]$ ранг равен 3, иначе 4