

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -\frac{9}{2} & 1 & 0 & 0 \\ 1 & -\frac{26}{71} & 1 & 0 \\ 4 & -\frac{66}{71} & \frac{137}{97} & 1 \end{bmatrix}, U = \begin{bmatrix} 2 & -9 & 0 & 8 \\ 0 & -\frac{71}{2} & 5 & 34 \\ 0 & 0 & \frac{485}{71} & \frac{458}{71} \\ 0 & 0 & 0 & -\frac{728}{97} \end{bmatrix}$$

3.

$$\begin{pmatrix} -2 & -7 & -11 \\ -13 & 5 & -5 \\ 19 & 13 & -16 \end{pmatrix}$$

4.

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

5.

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

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

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

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

$$7. -\frac{2 \cdot 32^n}{3} + \frac{5 \cdot 80^n}{3}$$

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

9. При  $\lambda = 5$

10. Определитель:  $106\lambda + 22$ , при  $\lambda = [-11/53]$  ранг равен 3, иначе 4