

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -4 & 1 & 0 & 0 \\ 7 & -\frac{42}{29} & 1 & 0 \\ -5 & \frac{43}{29} & \frac{7}{18} & 1 \end{bmatrix}, U = \begin{bmatrix} -1 & 7 & -8 & 0 \\ 0 & 29 & -29 & 6 \\ 0 & 0 & 18 & \frac{49}{29} \\ 0 & 0 & 0 & -\frac{8641}{522} \end{bmatrix}$$

3.

$$\begin{pmatrix} 4 & -11 & -10 \\ -11 & 3 & 0 \\ 18 & -14 & 17 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 9, 5, 7, 3, 6, 4)(2, 8), \text{ord} = 14, \sigma^{-751} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 6 & 8 & 5 & 3 & 1 & 7 & 9 & 2 & 4 \end{pmatrix} = (1, 6, 7, 9, 4, 3, 5)(2, 8)$$

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

$$7. \frac{21(-21)^n}{31} + \frac{10 \cdot 10^n}{31}$$

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

9. При $\lambda = 4$

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