

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ \frac{1}{4} & \frac{7}{32} & 1 & 0 \\ 1 & 0 & -\frac{192}{257} & 1 \end{bmatrix}, U = \begin{bmatrix} -4 & -5 & 2 & 8 \\ 0 & -8 & 7 & -7 \\ 0 & 0 & -\frac{257}{32} & -\frac{303}{32} \\ 0 & 0 & 0 & -\frac{3874}{257} \end{bmatrix}$$

3.

$$\begin{pmatrix} -19 & 6 & 5 \\ -4 & 6 & -11 \\ -2 & 18 & -10 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 4, 5, 3, 7)(2, 9, 8, 6), \text{ord} = 20, \sigma^{-821} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 7 & 6 & 5 & 1 & 4 & 8 & 3 & 9 & 2 \end{pmatrix} = (1, 7, 3, 5, 4)(2, 6, 8, 9)$$

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

$$7. \frac{9(-18)^n}{29} + \frac{20 \cdot 40^n}{29}$$

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

9. При $\lambda = -4$

10. Определитель: $434 - 42\lambda$, при $\lambda = [31/3]$ ранг равен 3, иначе 4