

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ \frac{9}{2} & 1 & 0 & 0 \\ 2 & \frac{4}{65} & 1 & 0 \\ -1 & \frac{4}{65} & -\frac{149}{46} & 1 \end{bmatrix}, U = \begin{bmatrix} -2 & 5 & -3 & -1 \\ 0 & -\frac{65}{2} & \frac{23}{2} & \frac{21}{2} \\ 0 & 0 & -\frac{46}{65} & \frac{413}{65} \\ 0 & 0 & 0 & \frac{1147}{46} \end{bmatrix}$$

3.

$$\begin{pmatrix} 4 & 6 & -1 \\ 12 & 18 & -4 \\ 0 & -11 & -6 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 3, 7, 9, 6, 8, 4)(2, 5), \text{ord} = 14, \sigma^{-733} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 7 & 5 & 9 & 3 & 2 & 4 & 6 & 1 & 8 \end{pmatrix} = (1, 7, 6, 4, 3, 9, 8)(2, 5)$$

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

$$7. -\frac{3 \cdot 54^n}{2} + \frac{5 \cdot 90^n}{2}$$

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

9. При $\lambda = 2$

10. Определитель: $12\lambda - 124$, при $\lambda = [31/3]$ ранг равен 3, иначе 4