

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ -\frac{2}{3} & 13 & 1 & 0 \\ \frac{3}{2} & -4 & -\frac{183}{532} & 1 \end{bmatrix}, U = \begin{bmatrix} 6 & -6 & -7 & 2 \\ 0 & -1 & 7 & 7 \\ 0 & 0 & -\frac{266}{3} & -\frac{245}{3} \\ 0 & 0 & 0 & \frac{373}{76} \end{bmatrix}$$

3.

$$\begin{pmatrix} 11 & 15 & 9 \\ -6 & -6 & 15 \\ 18 & -15 & 2 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 6, 9, 5, 4, 2, 8)(3, 7), \text{ord} = 14, \sigma^{-787} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 4 & 9 & 7 & 6 & 1 & 2 & 3 & 5 & 8 \end{pmatrix} = (1, 4, 6, 2, 9, 8, 5)(3, 7)$$

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

$$7. -\frac{3(-3)^n}{4} + \frac{7(-7)^n}{4}$$

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

9. При $\lambda = 3$

10. Определитель: $-\lambda - 62$, при $\lambda = [-62]$ ранг равен 3, иначе 4