

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ \frac{9}{4} & 1 & 0 & 0 \\ -1 & -\frac{22}{43} & 1 & 0 \\ -\frac{7}{4} & -\frac{29}{43} & -\frac{35}{356} & 1 \end{bmatrix}, U = \begin{bmatrix} -4 & -10 & -8 & -7 \\ 0 & \frac{43}{2} & 24 & \frac{95}{4} \\ 0 & 0 & \frac{356}{43} & \frac{787}{86} \\ 0 & 0 & 0 & -\frac{237}{712} \end{bmatrix}$$

3.

$$\begin{pmatrix} -5 & -5 & -20 \\ 5 & 12 & 4 \\ -6 & -17 & 17 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 8, 3, 5)(2, 9, 4, 6, 7), \text{ord} = 20, \sigma^{-787} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 8 & 6 & 5 & 2 & 1 & 9 & 4 & 3 & 7 \end{pmatrix} = (1, 8, 3, 5)(2, 6, 9, 7, 4)$$

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

$$7. \frac{3(-6)^n}{28} + \frac{25 \cdot 50^n}{28}$$

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

9. При $\lambda = 9$

10. Определитель: $-8\lambda - 9$, при $\lambda = [-9/8]$ ранг равен 3, иначе 4