1.

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

2. $L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -\frac{1}{5} & 1 & 0 & 0 \\ -1 & -\frac{10}{11} & 1 & 0 \\ -\frac{9}{5} & -\frac{79}{44} & -\frac{65}{12} & 1 \end{bmatrix}, U = \begin{bmatrix} -5 & 6 & 2 & 6 \\ 0 & -\frac{44}{5} & -\frac{33}{5} & -\frac{19}{5} \\ 0 & 0 & 3 & \frac{6}{11} \\ 0 & 0 & 0 & \frac{85}{44} \end{bmatrix}$

3.

$$\begin{pmatrix} -7 & -14 & 8 \\ -13 & 16 & -9 \\ -3 & -6 & -8 \end{pmatrix}$$

4.

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

5.

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

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

7. $-\frac{3 \cdot 12^n}{17} + \frac{20 \cdot 80^n}{17}$

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

9. При $\lambda = -1$

10. Определитель: $349 - 101\lambda$, при $\lambda = [349/101]$ ранг равен 3, иначе 4