1.

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

2. $L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 2 & 1 & 0 & 0 \\ -\frac{1}{5} & -\frac{7}{20} & 1 & 0 \\ -1 & -\frac{15}{28} & \frac{3}{77} & 1 \end{bmatrix}, U = \begin{bmatrix} -5 & 9 & -3 & 8 \\ 0 & -28 & 11 & -9 \\ 0 & 0 & -\frac{11}{4} & -\frac{51}{20} \\ 0 & 0 & 0 & -\frac{1048}{385} \end{bmatrix}$

3.

$$\begin{pmatrix} 18 & 13 & -7 \\ -4 & 8 & 18 \\ 12 & 14 & -18 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1,9,8,3)(2,4)(5,6,7), ord = 12, \sigma^{-787} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 9 & 4 & 1 & 2 & 7 & 5 & 6 & 3 & 8 \end{pmatrix} = (1,9,8,3)(2,4)(5,7,6)$$

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

7. $\frac{2(-10)^n}{7} + \frac{5 \cdot 25^n}{7}$

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

9. При $\lambda = 4$

10. Определитель: $87\lambda - 54$, при $\lambda = [18/29]$ ранг равен 3, иначе 4