1.

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

2. $L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -\frac{2}{3} & 1 & 0 & 0 \\ \frac{7}{6} & 41 & 1 & 0 \\ -\frac{1}{3} & 5 & \frac{112}{1007} & 1 \end{bmatrix}, U = \begin{bmatrix} -6 & 4 & -3 & 1 \\ 0 & -\frac{1}{3} & -12 & \frac{14}{3} \\ 0 & 0 & \frac{1007}{2} & -\frac{371}{2} \\ 0 & 0 & 0 & \frac{31}{19} \end{bmatrix}$

3.

$$\begin{pmatrix} -17 & -8 & 10 \\ 2 & -17 & 0 \\ -9 & -17 & -3 \end{pmatrix}$$

4.

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

5.

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

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

7. $\frac{3(-54)^n}{4} + \frac{18^n}{4}$

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

9. При $\lambda = 4$

10. Определитель: -34λ, при $\lambda = [0]$ ранг равен 3, иначе 4