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

2. $L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -10 & 1 & 0 & 0 \\ -8 & \frac{71}{86} & 1 & 0 \\ 3 & -\frac{27}{86} & -\frac{589}{915} & 1 \end{bmatrix}, U = \begin{bmatrix} 1 & -8 & 7 & 1 \\ 0 & -86 & 61 & 16 \\ 0 & 0 & \frac{915}{86} & -\frac{138}{43} \\ 0 & 0 & 0 & \frac{597}{305} \end{bmatrix}$

3.
$$\begin{pmatrix} -12 & -5 & -7 \\ 2 & 7 & -10 \\ -1 & -16 & 18 \end{pmatrix}$$

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

5.
$$\sigma = (1,9,2,6,5,3,4)(7,8), ord = 14, \sigma^{-827} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 4 & 9 & 5 & 3 & 6 & 2 & 8 & 7 & 1 \end{pmatrix} = (1,4,3,5,6,2,9)(7,8)$$

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

7. $\frac{4(-40)^n}{7} + \frac{3 \cdot 30^n}{7}$

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

9. При $\lambda = 2$

10. Определитель: $58\lambda - 127$, при $\lambda = [127/58]$ ранг равен 3, иначе 4