1.

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

2. $L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -\frac{2}{9} & 1 & 0 & 0 \\ -\frac{8}{9} & -\frac{137}{31} & 1 & 0 \\ -1 & -\frac{63}{31} & \frac{72}{161} & 1 \end{bmatrix}, U = \begin{bmatrix} -9 & -7 & 6 & 5 \\ 0 & \frac{31}{9} & -\frac{2}{3} & \frac{28}{9} \\ 0 & 0 & \frac{322}{31} & \frac{750}{31} \\ 0 & 0 & 0 & \frac{886}{161} \end{bmatrix}$

3.

$$\begin{pmatrix} 10 & 18 & -15 \\ 3 & -15 & 4 \\ -10 & 9 & 9 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1,7,4,8,9,3,2)(5,6), ord = 14, \sigma^{-797} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 7 & 1 & 2 & 8 & 6 & 5 & 4 & 9 & 3 \end{pmatrix} = (1,7,4,8,9,3,2)(5,6)$$

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

7. $\frac{7(-70)^n}{9} + \frac{2 \cdot 20^n}{9}$

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

9. При $\lambda = 2$

10. Определитель: $6 - 52\lambda$, при $\lambda = [3/26]$ ранг равен 3, иначе 4