1.

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

2. $L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -6 & 1 & 0 & 0 \\ 8 & -\frac{35}{23} & 1 & 0 \\ -7 & \frac{53}{46} & -\frac{89}{200} & 1 \end{bmatrix}, U = \begin{bmatrix} -1 & 8 & 3 & -7 \\ 0 & 46 & 14 & -39 \\ 0 & 0 & -\frac{200}{23} & \frac{38}{23} \\ 0 & 0 & 0 & \frac{167}{100} \end{bmatrix}$

3.

$$\begin{pmatrix} -10 & 18 & -18 \\ 1 & -18 & -13 \\ -10 & -20 & -7 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1,7,9,5,6,4)(2,8,3), ord = 6, \sigma^{-811} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 4 & 3 & 8 & 6 & 9 & 5 & 1 & 2 & 7 \end{pmatrix} = (1,4,6,5,9,7)(2,3,8)$$

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

7. $\frac{4(-12)^n}{3} - \frac{(-3)^n}{3}$

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

9. При $\lambda = 1$

10. Определитель: $76\lambda - 906$, при $\lambda = [453/38]$ ранг равен 3, иначе 4