1.

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

2. $L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ -\frac{2}{5} & \frac{1}{5} & 1 & 0 \\ \frac{7}{5} & \frac{3}{5} & \frac{43}{5} & 1 \end{bmatrix}, U = \begin{bmatrix} 5 & 0 & -2 & -4 \\ 0 & -10 & -9 & 7 \\ 0 & 0 & 2 & 5 \\ 0 & 0 & 0 & -\frac{233}{5} \end{bmatrix}$

3.

$$\begin{pmatrix} 18 & -14 & -6 \\ 11 & -12 & 14 \\ -9 & 8 & 10 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1,9,2,7)(3,6,8)(4,5), ord = 12, \sigma^{-733} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 7 & 9 & 8 & 5 & 4 & 3 & 2 & 6 & 1 \end{pmatrix} = (1,7,2,9)(3,8,6)(4,5)$$

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

7. $\frac{9 \cdot 36^n}{7} - \frac{2 \cdot 8^n}{7}$

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

9. При $\lambda = -9$

10. Определитель: $28\lambda - 96$, при $\lambda = [24/7]$ ранг равен 3, иначе 4