1.

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

2. $L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ \frac{1}{2} & 1 & 0 & 0 \\ \frac{7}{6} & \frac{7}{69} & 1 & 0 \\ \frac{5}{6} & \frac{71}{69} & \frac{82}{103} & 1 \end{bmatrix}$, $U = \begin{bmatrix} 6 & -7 & -10 & -9 \\ 0 & \frac{23}{2} & 7 & \frac{7}{2} \\ 0 & 0 & \frac{206}{23} & \frac{286}{69} \\ 0 & 0 & 0 & -\frac{2596}{309} \end{bmatrix}$

3.

$$\begin{pmatrix} -6 & -8 & 12 \\ 19 & 7 & -16 \\ 11 & 15 & -18 \end{pmatrix}$$

4.

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

5.

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

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

7. $\frac{5(-35)^n}{14} + \frac{9 \cdot 63^n}{14}$

8. $0 + 4*x + -4*x^2 + -1*x^3 + -2*x^4$

9. При $\lambda = 9$

10. Определитель: $68\lambda - 266$, при $\lambda = [133/34]$ ранг равен 3, иначе 4