1.

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

2. $L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ \frac{1}{6} & 1 & 0 & 0 \\ \frac{5}{6} & \frac{16}{5} & 1 & 0 \\ \frac{1}{3} & -\frac{14}{5} & -\frac{78}{97} & 1 \end{bmatrix}, U = \begin{bmatrix} 6 & -10 & 6 & -2 \\ 0 & \frac{5}{3} & -7 & -\frac{17}{3} \\ 0 & 0 & \frac{97}{5} & \frac{49}{5} \\ 0 & 0 & 0 & \frac{163}{97} \end{bmatrix}$

3.

$$\begin{pmatrix} 12 & -9 & -5 \\ -7 & -14 & -8 \\ 4 & -11 & -3 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1,8,4,7,9)(2,6,3,5), ord = 20, \sigma^{-773} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 4 & 5 & 6 & 9 & 3 & 2 & 1 & 7 & 8 \end{pmatrix} = (1,4,9,8,7)(2,5,3,6)$$

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

7. $\frac{6(-18)^n}{13} + \frac{7 \cdot 21^n}{13}$

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

9. При $\lambda = 5$

10. Определитель: $330 - 8\lambda$, при $\lambda = [165/4]$ ранг равен 3, иначе 4