1.

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

2. $L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ -\frac{9}{2} & -\frac{63}{4} & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}, U = \begin{bmatrix} -2 & -7 & -6 & -2 \\ 0 & 2 & -10 & 3 \\ 0 & 0 & -\frac{375}{2} & \frac{117}{4} \\ 0 & 0 & 0 & 5 \end{bmatrix}$

3.

$$\begin{pmatrix} -4 & 10 & -13 \\ 14 & -7 & 8 \\ -18 & -5 & -5 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1,6,3,2)(4,7,5)(8,9), ord = 12, \sigma^{-773} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 2 & 3 & 6 & 7 & 4 & 1 & 5 & 9 & 8 \end{pmatrix} = (1,2,3,6)(4,7,5)(8,9)$$

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

7. $\frac{5(-30)^n}{6} + \frac{6^n}{6}$

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

9. При $\lambda = 2$

10. Определитель: $3 - 53\lambda$, при $\lambda = [3/53]$ ранг равен 3, иначе 4