1.

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

2. $L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ \frac{9}{7} & 1 & 0 & 0 \\ 1 & -7 & 1 & 0 \\ -\frac{1}{7} & \frac{5}{4} & -\frac{35}{96} & 1 \end{bmatrix}, U = \begin{bmatrix} 7 & -3 & 1 & -7 \\ 0 & -\frac{8}{7} & \frac{54}{7} & 15 \\ 0 & 0 & 48 & 114 \\ 0 & 0 & 0 & \frac{493}{16} \end{bmatrix}$

3.

$$\begin{pmatrix} -4 & -10 & -2 \\ 19 & 8 & 6 \\ 1 & 15 & -7 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1,7,9,8,2,3,6)(4,5), ord = 14, \sigma^{-739} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 8 & 1 & 7 & 5 & 4 & 9 & 2 & 6 & 3 \end{pmatrix} = (1,8,6,9,3,7,2)(4,5)$$

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

7. $\frac{20(-20)^n}{17} - \frac{3(-3)^n}{17}$

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

9. При $\lambda = 0$

10. Определитель: $-70\lambda - 346$, при $\lambda = [-173/35]$ ранг равен 3, иначе 4