1.

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

2. $L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ -5 & \frac{13}{5} & 1 & 0 \\ -5 & \frac{9}{5} & \frac{27}{44} & 1 \end{bmatrix}, U = \begin{bmatrix} -1 & -5 & -2 & 8 \\ 0 & -10 & 7 & -3 \\ 0 & 0 & -\frac{176}{5} & \frac{249}{5} \\ 0 & 0 & 0 & \frac{213}{44} \end{bmatrix}$

3.

$$\begin{pmatrix} -8 & 9 & -15 \\ 19 & -4 & 4 \\ -18 & -12 & -9 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1,6,8,5,7,9,2)(3,4), ord = 14, \sigma^{-743} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 2 & 9 & 4 & 3 & 8 & 1 & 5 & 6 & 7 \end{pmatrix} = (1,2,9,7,5,8,6)(3,4)$$

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

7. $-\frac{2(-20)^n}{3} + \frac{5(-50)^n}{3}$

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

9. При $\lambda = 4$

10. Определитель: $68 - 20\lambda$, при $\lambda = [17/5]$ ранг равен 3, иначе 4