1.

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

2. $L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ \frac{2}{3} & 1 & 0 & 0 \\ \frac{5}{3} & \frac{23}{11} & 1 & 0 \\ \frac{4}{3} & -\frac{1}{22} & \frac{69}{302} & 1 \end{bmatrix}, U = \begin{bmatrix} 3 & -5 & 4 & -7 \\ 0 & \frac{22}{3} & \frac{13}{3} & -\frac{10}{3} \\ 0 & 0 & -\frac{151}{11} & \frac{172}{11} \\ 0 & 0 & 0 & \frac{847}{151} \end{bmatrix}$

3.

$$\begin{pmatrix} 6 & -11 & 15 \\ 15 & 12 & 13 \\ 17 & 10 & -6 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1,7,8,9,3,6,2)(4,5), ord = 14, \sigma^{-719} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 8 & 7 & 2 & 5 & 4 & 1 & 9 & 3 & 6 \end{pmatrix} = (1,8,3,2,7,9,6)(4,5)$$

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

7. $\frac{(-4)^n}{11} + \frac{10 \cdot 40^n}{11}$

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

9. При $\lambda = -1$

10. Определитель: $42\lambda - 80$, при $\lambda = [40/21]$ ранг равен 3, иначе 4