1.

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

2. $L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ \frac{1}{3} & 1 & 0 & 0 \\ -\frac{8}{3} & 52 & 1 & 0 \\ 0 & 15 & \frac{31}{111} & 1 \end{bmatrix}, U = \begin{bmatrix} -3 & -10 & 2 & -8 \\ 0 & -\frac{2}{3} & \frac{7}{3} & -\frac{10}{3} \\ 0 & 0 & -111 & 150 \\ 0 & 0 & 0 & \frac{263}{37} \end{bmatrix}$

3.

$$\begin{pmatrix} -11 & -6 & 10 \\ -9 & -5 & 7 \\ -16 & -9 & 12 \end{pmatrix}$$

4.

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

5.

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

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

7. $\frac{(-9)^n}{10} + \frac{9 \cdot 81^n}{10}$

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

9. При $\lambda = -3$

10. Определитель: $376 - 126\lambda$, при $\lambda = [188/63]$ ранг равен 3, иначе 4