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

2. $L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -2 & 1 & 0 & 0 \\ \frac{7}{3} & -\frac{5}{21} & 1 & 0 \\ -\frac{1}{3} & \frac{10}{21} & \frac{143}{177} & 1 \end{bmatrix}, U = \begin{bmatrix} -3 & -6 & -7 & 5 \\ 0 & -21 & -23 & 9 \\ 0 & 0 & \frac{118}{7} & -\frac{284}{21} \\ 0 & 0 & 0 & \frac{9190}{531} \end{bmatrix}$

3.
$$\begin{pmatrix} 14 & 15 & -17 \\ -16 & -1 & -20 \\ -16 & 1 & 5 \end{pmatrix}$$

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

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

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. $-\frac{5(-15)^n}{4} + \frac{9(-27)^n}{4}$

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

9. При $\lambda = 9$

10. Определитель: $-20\lambda - 12$, при $\lambda = [-3/5]$ ранг равен 3, иначе 4