1.

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

2. $L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ \frac{2}{3} & 1 & 0 & 0 \\ -2 & 2 & 1 & 0 \\ \frac{8}{3} & -\frac{11}{7} & -\frac{333}{266} & 1 \end{bmatrix}, U = \begin{bmatrix} 3 & -3 & -5 & -4 \\ 0 & -7 & \frac{1}{3} & -\frac{22}{3} \\ 0 & 0 & -\frac{38}{3} & -\frac{4}{3} \\ 0 & 0 & 0 & -\frac{162}{19} \end{bmatrix}$

3.

$$\begin{pmatrix} 3 & -8 & 11 \\ -1 & 1 & -15 \\ -5 & 14 & -2 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1,5,6,7,2,3,8)(4,9), ord = 14, \sigma^{-727} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 5 & 3 & 8 & 9 & 6 & 7 & 2 & 1 & 4 \end{pmatrix} = (1,5,6,7,2,3,8)(4,9)$$

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

7. $-\frac{9(-27)^n}{7} + \frac{16(-48)^n}{7}$

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

9. При $\lambda = -4$

10. Определитель: $168\lambda - 28$, при $\lambda = [1/6]$ ранг равен 3, иначе 4