1.

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

2. $L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -\frac{7}{8} & 1 & 0 & 0 \\ \frac{5}{8} & \frac{17}{5} & 1 & 0 \\ -\frac{5}{8} & -13 & -\frac{105}{13} & 1 \end{bmatrix}, U = \begin{bmatrix} 8 & 3 & 1 & 4 \\ 0 & \frac{5}{8} & -\frac{41}{8} & -\frac{11}{2} \\ 0 & 0 & \frac{39}{5} & \frac{41}{5} \\ 0 & 0 & 0 & -\frac{10}{13} \end{bmatrix}$

3.

$$\begin{pmatrix} -9 & 19 & -4 \\ 17 & -16 & -8 \\ 16 & 2 & -7 \end{pmatrix}$$

4.

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

5.

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

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

7. $\frac{8(-8)^n}{17} + \frac{9 \cdot 9^n}{17}$

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

9. При $\lambda = -5$

10. Определитель: $15\lambda - 123$, при $\lambda = [41/5]$ ранг равен 3, иначе 4