1.

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

2. $L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ -\frac{7}{2} & -\frac{39}{14} & 1 & 0 \\ \frac{1}{2} & \frac{19}{14} & -\frac{29}{243} & 1 \end{bmatrix}, U = \begin{bmatrix} 2 & -3 & -4 & -8 \\ 0 & 7 & -6 & -5 \\ 0 & 0 & -\frac{243}{7} & -\frac{475}{14} \\ 0 & 0 & 0 & \frac{1637}{243} \end{bmatrix}$

3.

$$\begin{pmatrix} 11 & 17 & 1 \\ 9 & -20 & -3 \\ 0 & 4 & -19 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1,7,5,4,9)(2,8)(3,6), ord = 10, \sigma^{-727} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 4 & 8 & 6 & 7 & 1 & 3 & 9 & 2 & 5 \end{pmatrix} = (1,4,7,9,5)(2,8)(3,6)$$

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

7. $\frac{5(-20)^n}{6} + \frac{4^n}{6}$

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

9. При $\lambda = 9$

10. Определитель: $90\lambda - 144$, при $\lambda = [8/5]$ ранг равен 3, иначе 4