1.

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

2. $L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -\frac{1}{2} & 1 & 0 & 0 \\ \frac{7}{6} & -\frac{11}{51} & 1 & 0 \\ \frac{4}{3} & -\frac{28}{51} & \frac{6}{5} & 1 \end{bmatrix}, U = \begin{bmatrix} 6 & -1 & 6 & -5 \\ 0 & \frac{17}{2} & 0 & -\frac{1}{2} \\ 0 & 0 & -5 & \frac{292}{51} \\ 0 & 0 & 0 & -\frac{2417}{255} \end{bmatrix}$

3.

$$\begin{pmatrix} -8 & -4 & -8 \\ -16 & -1 & 6 \\ -15 & -11 & -3 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1,8)(2,3,7)(4,6)(5,9), ord = 6, \sigma^{-733} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 8 & 7 & 2 & 6 & 9 & 4 & 3 & 1 & 5 \end{pmatrix} = (1,8)(2,7,3)(4,6)(5,9)$$

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

7. $\frac{3(-15)^n}{23} + \frac{20 \cdot 100^n}{23}$

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

9. При $\lambda = -7$

10. Определитель: $202 - 38\lambda$, при $\lambda = [101/19]$ ранг равен 3, иначе 4