

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 4 & \frac{83}{18} & 1 & 0 \\ \frac{8}{9} & -\frac{5}{18} & -\frac{22}{127} & 1 \end{bmatrix}, U = \begin{bmatrix} 9 & -5 & 4 & 8 \\ 0 & 2 & -10 & 8 \\ 0 & 0 & \frac{127}{3} & -\frac{328}{9} \\ 0 & 0 & 0 & -\frac{6173}{381} \end{bmatrix}$$

3.

$$\begin{pmatrix} 7 & 11 & 19 \\ -19 & 13 & -3 \\ -9 & 8 & 16 \end{pmatrix}$$

4.

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

5.

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

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

$$7. \frac{35(-35)^n}{53} + \frac{18 \cdot 18^n}{53}$$

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

9. При  $\lambda = 8$

10. Определитель:  $-117\lambda - 131$ , при  $\lambda = [-131/117]$  ранг равен 3, иначе 4