

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 3 & 1 & 0 & 0 \\ \frac{1}{3} & 2 & 1 & 0 \\ \frac{1}{3} & \frac{3}{2} & \frac{39}{47} & 1 \end{bmatrix}, U = \begin{bmatrix} 3 & 0 & -9 & 4 \\ 0 & 4 & 24 & -9 \\ 0 & 0 & -47 & \frac{26}{3} \\ 0 & 0 & 0 & \frac{2531}{282} \end{bmatrix}$$

3.

$$\begin{pmatrix} 10 & -6 & 7 \\ -3 & 13 & 8 \\ 16 & -8 & -15 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 6, 8, 5, 4, 7, 3)(2, 9), \text{ord} = 14, \sigma^{-739} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 5 & 9 & 8 & 1 & 3 & 4 & 6 & 7 & 2 \end{pmatrix} = (1, 5, 3, 8, 7, 6, 4)(2, 9)$$

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

$$7. \frac{2(-4)^n}{9} + \frac{7 \cdot 14^n}{9}$$

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

9. При  $\lambda = 4$

10. Определитель:  $-54\lambda - 843$ , при  $\lambda = [-281/18]$  ранг равен 3, иначе 4