

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -4 & 1 & 0 & 0 \\ \frac{1}{2} & -\frac{23}{24} & 1 & 0 \\ 1 & -\frac{1}{4} & -\frac{27}{65} & 1 \end{bmatrix}, U = \begin{bmatrix} -2 & -5 & 7 & -10 \\ 0 & -12 & 20 & -47 \\ 0 & 0 & \frac{65}{3} & -\frac{865}{24} \\ 0 & 0 & 0 & -\frac{1947}{104} \end{bmatrix}$$

3.

$$\begin{pmatrix} 4 & 1 & 0 \\ -7 & 16 & 0 \\ 9 & 15 & -2 \end{pmatrix}$$

4.

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

5.

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

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

$$7. \frac{5(-10)^n}{7} + \frac{2 \cdot 4^n}{7}$$

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

9. При  $\lambda = -2$

10. Определитель:  $522 - 19\lambda$ , при  $\lambda = [522/19]$  ранг равен 3, иначе 4