

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ \frac{7}{6} & 1 & 0 & 0 \\ \frac{2}{3} & -20 & 1 & 0 \\ \frac{5}{3} & 37 & -\frac{103}{32} & 1 \end{bmatrix}, U = \begin{bmatrix} -6 & 2 & 7 & -2 \\ 0 & -\frac{1}{3} & \frac{5}{6} & -\frac{5}{3} \\ 0 & 0 & 16 & -24 \\ 0 & 0 & 0 & -\frac{17}{4} \end{bmatrix}$$

3.

$$\begin{pmatrix} 8 & 5 & 4 \\ -8 & 10 & -17 \\ 10 & 2 & -13 \end{pmatrix}$$

4.

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

5.

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

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

$$7. \frac{25(-25)^n}{17} - \frac{8(-8)^n}{17}$$

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

9. При  $\lambda = 7$

10. Определитель:  $45\lambda + 353$ , при  $\lambda = [-353/45]$  ранг равен 3, иначе 4