

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -\frac{7}{3} & 1 & 0 & 0 \\ 1 & \frac{1}{16} & 1 & 0 \\ -\frac{2}{3} & -\frac{7}{16} & \frac{267}{115} & 1 \end{bmatrix}, U = \begin{bmatrix} -3 & -3 & 1 & 6 \\ 0 & -16 & \frac{10}{3} & 12 \\ 0 & 0 & \frac{115}{24} & -\frac{7}{4} \\ 0 & 0 & 0 & \frac{2451}{115} \end{bmatrix}$$

3.

$$\begin{pmatrix} 7 & -4 & -17 \\ -8 & -17 & -9 \\ 7 & 3 & 19 \end{pmatrix}$$

4.

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

5.

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

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

$$7. -\frac{5(-10)^n}{11} + \frac{16(-32)^n}{11}$$

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

9. При  $\lambda = -4$

10. Определитель:  $-108\lambda - 486$ , при  $\lambda = [-9/2]$  ранг равен 3, иначе 4