

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -\frac{8}{5} & 1 & 0 & 0 \\ 2 & -\frac{85}{99} & 1 & 0 \\ -\frac{7}{5} & \frac{1}{9} & \frac{286}{391} & 1 \end{bmatrix}, U = \begin{bmatrix} -5 & 8 & -1 & -4 \\ 0 & \frac{99}{5} & -\frac{23}{5} & -\frac{32}{5} \\ 0 & 0 & -\frac{391}{99} & \frac{1139}{99} \\ 0 & 0 & 0 & -\frac{444}{23} \end{bmatrix}$$

3.

$$\begin{pmatrix} -15 & -3 & -15 \\ -5 & -17 & 4 \\ -7 & -11 & 11 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 7, 5, 9, 8)(2, 4)(3, 6), \text{ord} = 10, \sigma^{-739} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 7 & 4 & 6 & 2 & 9 & 3 & 5 & 1 & 8 \end{pmatrix} = (1, 7, 5, 9, 8)(2, 4)(3, 6)$$

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

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

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

$$7. -\frac{3^n}{23} + \frac{24 \cdot 72^n}{23}$$

$$8. 3 + 0 \cdot x + 0 \cdot x^2 + 4 \cdot x^3 + 2 \cdot x^4$$

9. При  $\lambda = -3$

10. Определитель:  $39\lambda - 727$ , при  $\lambda = [727/39]$  ранг равен 3, иначе 4