

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 1 & 1 & 0 & 0 \\ -\frac{9}{2} & \frac{7}{2} & 1 & 0 \\ -\frac{5}{2} & -\frac{1}{2} & -\frac{1}{5} & 1 \end{bmatrix}, U = \begin{bmatrix} -2 & 3 & 1 & -6 \\ 0 & 5 & 5 & 0 \\ 0 & 0 & -5 & -30 \\ 0 & 0 & 0 & -23 \end{bmatrix}$$

3.

$$\begin{pmatrix} -3 & -5 & 8 \\ 1 & 10 & -9 \\ -20 & 11 & -19 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 6, 9, 3, 4, 8)(2, 5, 7), \text{ord} = 6, \sigma^{-751} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 8 & 7 & 9 & 3 & 2 & 1 & 5 & 4 & 6 \end{pmatrix} = (1, 8, 4, 3, 9, 6)(2, 7, 5)$$

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

$$7. \frac{4(-4)^n}{13} + \frac{9 \cdot 9^n}{13}$$

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

9. При  $\lambda = -3$

10. Определитель:  $14\lambda + 792$ , при  $\lambda = [-396/7]$  ранг равен 3, иначе 4