

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -\frac{2}{5} & 1 & 0 & 0 \\ \frac{3}{5} & 11 & 1 & 0 \\ -\frac{9}{5} & -\frac{21}{2} & -\frac{109}{105} & 1 \end{bmatrix}, U = \begin{bmatrix} 5 & 1 & 1 & -6 \\ 0 & \frac{2}{5} & -\frac{48}{5} & -\frac{27}{5} \\ 0 & 0 & 105 & 71 \\ 0 & 0 & 0 & \frac{43}{210} \end{bmatrix}$$

3.

$$\begin{pmatrix} 17 & 16 & 1 \\ 2 & -1 & 13 \\ 8 & 3 & 19 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 6, 5, 9, 2, 8, 3)(4, 7), \text{ord} = 14, \sigma^{-743} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 3 & 9 & 8 & 7 & 6 & 1 & 4 & 2 & 5 \end{pmatrix} = (1, 3, 8, 2, 9, 5, 6)(4, 7)$$

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

7.  $3 \cdot 12^n - 2 \cdot 8^n$

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

9. При  $\lambda = -6$

10. Определитель:  $53\lambda - 442$ , при  $\lambda = [442/53]$  ранг равен 3, иначе 4