

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -\frac{5}{3} & 1 & 0 & 0 \\ 1 & -\frac{24}{7} & 1 & 0 \\ -\frac{2}{3} & -\frac{11}{7} & \frac{281}{503} & 1 \end{bmatrix}, U = \begin{bmatrix} -3 & 2 & -7 & -3 \\ 0 & \frac{7}{3} & -\frac{62}{3} & 1 \\ 0 & 0 & -\frac{503}{7} & \frac{73}{7} \\ 0 & 0 & 0 & \frac{878}{503} \end{bmatrix}$$

3.

$$\begin{pmatrix} -16 & -13 & -12 \\ 18 & 15 & 19 \\ 17 & -18 & -1 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 8, 6, 3)(2, 5, 4, 9, 7), \text{ord} = 20, \sigma^{-743} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 8 & 4 & 1 & 7 & 9 & 3 & 5 & 6 & 2 \end{pmatrix} = (1, 8, 6, 3)(2, 4, 7, 5, 9)$$

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

$$7. \frac{20 \cdot 20^n}{17} - \frac{3 \cdot 3^n}{17}$$

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

9. При  $\lambda = 4$

10. Определитель:  $20\lambda - 128$ , при  $\lambda = [32/5]$  ранг равен 3, иначе 4