

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -\frac{2}{5} & 1 & 0 & 0 \\ -\frac{2}{5} & \frac{37}{22} & 1 & 0 \\ -\frac{3}{10} & \frac{63}{44} & \frac{112}{233} & 1 \end{bmatrix}, U = \begin{bmatrix} -10 & -1 & -10 & 4 \\ 0 & -\frac{22}{5} & -12 & \frac{33}{5} \\ 0 & 0 & \frac{233}{11} & -\frac{7}{2} \\ 0 & 0 & 0 & -\frac{1461}{932} \end{bmatrix}$$

3.

$$\begin{pmatrix} 19 & 6 & 16 \\ 5 & -8 & 19 \\ -8 & 18 & 7 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 2, 3, 4)(5, 7, 8)(6, 9), \text{ord} = 12, \sigma^{-743} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 2 & 3 & 4 & 1 & 7 & 9 & 8 & 5 & 6 \end{pmatrix} = (1, 2, 3, 4)(5, 7, 8)(6, 9)$$

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

$$7. \frac{5(-15)^n}{12} + \frac{7 \cdot 21^n}{12}$$

$$8. 4 + 0 * x + -2 * x^2 + -3 * x^3 + -4 * x^4$$

9. При $\lambda = 9$

10. Определитель: $80\lambda - 320$, при $\lambda = [4]$ ранг равен 3, иначе 4