

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ \frac{7}{9} & 1 & 0 & 0 \\ \frac{5}{9} & \frac{5}{16} & 1 & 0 \\ \frac{2}{3} & \frac{9}{16} & \frac{65}{93} & 1 \end{bmatrix}, U = \begin{bmatrix} -9 & -6 & 5 & -10 \\ 0 & \frac{32}{3} & -\frac{89}{9} & \frac{124}{9} \\ 0 & 0 & -\frac{155}{16} & -\frac{7}{4} \\ 0 & 0 & 0 & \frac{385}{93} \end{bmatrix}$$

3.

$$\begin{pmatrix} -16 & 0 & -10 \\ -2 & -16 & 7 \\ -12 & 6 & -4 \end{pmatrix}$$

4.

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

5.

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

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

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

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

7. $-15(-45)^n + 16(-48)^n$

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

9. При $\lambda = -8$

10. Определитель: $10\lambda + 108$, при $\lambda = [-54/5]$ ранг равен 3, иначе 4