

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -4 & 1 & 0 & 0 \\ 3 & -\frac{4}{9} & 1 & 0 \\ -1 & \frac{7}{9} & -\frac{11}{3} & 1 \end{bmatrix}, U = \begin{bmatrix} -2 & -4 & 6 & 1 \\ 0 & -9 & 27 & 7 \\ 0 & 0 & 3 & \frac{19}{9} \\ 0 & 0 & 0 & \frac{224}{27} \end{bmatrix}$$

3.

$$\begin{pmatrix} 11 & -20 & 13 \\ 17 & 13 & 15 \\ -1 & 8 & -1 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 7)(2, 8, 9, 6, 5)(3, 4), \text{ord} = 10, \sigma^{-823} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 7 & 9 & 4 & 3 & 8 & 2 & 1 & 6 & 5 \end{pmatrix} = (1, 7)(2, 9, 5, 8, 6)(3, 4)$$

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

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

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

$$7. \frac{4(-48)^n}{5} + \frac{12^n}{5}$$

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

9. При  $\lambda = -5$

10. Определитель:  $12\lambda + 317$ , при  $\lambda = [-317/12]$  ранг равен 3, иначе 4