

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 5 & 1 & 0 & 0 \\ \frac{9}{2} & 17 & 1 & 0 \\ -\frac{1}{2} & -8 & -\frac{278}{593} & 1 \end{bmatrix}, U = \begin{bmatrix} -2 & 2 & 6 & -4 \\ 0 & -1 & -36 & 12 \\ 0 & 0 & 593 & -194 \\ 0 & 0 & 0 & \frac{4775}{593} \end{bmatrix}$$

3.

$$\begin{pmatrix} 5 & 10 & 10 \\ -15 & -4 & 5 \\ 14 & 14 & -6 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 7, 6, 3, 4)(2, 5, 8, 9), \text{ord} = 20, \sigma^{-751} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 4 & 5 & 6 & 3 & 8 & 7 & 1 & 9 & 2 \end{pmatrix} = (1, 4, 3, 6, 7)(2, 5, 8, 9)$$

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

7.  $5(-10)^n - 4(-8)^n$

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

9. При  $\lambda = -7$

10. Определитель:  $313 - 10\lambda$ , при  $\lambda = [313/10]$  ранг равен 3, иначе 4