

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -\frac{1}{2} & 1 & 0 & 0 \\ \frac{7}{6} & -\frac{11}{51} & 1 & 0 \\ \frac{4}{3} & -\frac{28}{51} & \frac{6}{5} & 1 \end{bmatrix}, U = \begin{bmatrix} 6 & -1 & 6 & -5 \\ 0 & \frac{17}{2} & 0 & -\frac{1}{2} \\ 0 & 0 & -5 & \frac{292}{51} \\ 0 & 0 & 0 & -\frac{2417}{255} \end{bmatrix}$$

3.

$$\begin{pmatrix} -8 & -4 & -8 \\ -16 & -1 & 6 \\ -15 & -11 & -3 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 8)(2, 3, 7)(4, 6)(5, 9), \text{ord} = 6, \sigma^{-733} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 8 & 7 & 2 & 6 & 9 & 4 & 3 & 1 & 5 \end{pmatrix} = (1, 8)(2, 7, 3)(4, 6)(5, 9)$$

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

$$7. \frac{3(-15)^n}{23} + \frac{20 \cdot 100^n}{23}$$

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

9. При  $\lambda = -7$

10. Определитель:  $202 - 38\lambda$ , при  $\lambda = [101/19]$  ранг равен 3, иначе 4