

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 3 & 1 & 0 & 0 \\ \frac{7}{2} & \frac{22}{5} & 1 & 0 \\ -3 & -\frac{8}{5} & -\frac{8}{97} & 1 \end{bmatrix}, U = \begin{bmatrix} -2 & -4 & -10 & -2 \\ 0 & 5 & 23 & -3 \\ 0 & 0 & -\frac{291}{5} & \frac{101}{5} \\ 0 & 0 & 0 & -\frac{1565}{97} \end{bmatrix}$$

3.

$$\begin{pmatrix} 5 & -18 & -18 \\ -15 & -20 & 14 \\ -12 & 19 & 18 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 4, 2, 9, 6, 7, 5)(3, 8), \text{ord} = 14, \sigma^{-751} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 7 & 1 & 8 & 5 & 6 & 2 & 9 & 3 & 4 \end{pmatrix} = (1, 7, 9, 4, 5, 6, 2)(3, 8)$$

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

$$7. \frac{35(-70)^n}{53} + \frac{18 \cdot 36^n}{53}$$

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

9. При $\lambda = -4$

10. Определитель: $188\lambda - 433$, при $\lambda = [433/188]$ ранг равен 3, иначе 4