

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 9 & -\frac{37}{3} & 1 & 0 \\ 4 & -\frac{29}{6} & \frac{97}{154} & 1 \end{bmatrix}, U = \begin{bmatrix} 1 & 9 & 3 & 6 \\ 0 & 6 & 5 & 1 \\ 0 & 0 & \frac{77}{3} & -\frac{143}{3} \\ 0 & 0 & 0 & \frac{20}{7} \end{bmatrix}$$

3.

$$\begin{pmatrix} -2 & 7 & 11 \\ -10 & 19 & -3 \\ -8 & -4 & 15 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 2, 6)(3, 4, 9, 8, 5, 7), \text{ord} = 6, \sigma^{-739} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 6 & 1 & 7 & 3 & 8 & 2 & 5 & 9 & 4 \end{pmatrix} = (1, 6, 2)(3, 7, 5, 8, 9, 4)$$

$$6. \text{Id}; (1, 2, 4, 6, 7, 3, 5); (1, 3, 6, 2, 5, 7, 4); (1, 4, 7, 5, 2, 6, 3); \\ (1, 5, 3, 7, 6, 4, 2); (1, 6, 5, 4, 3, 2, 7); (1, 7, 2, 3, 4, 5, 6);$$

$$7. -\frac{40 \cdot 40^n}{41} + \frac{81 \cdot 81^n}{41}$$

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

$$9. \text{При } \lambda = -9$$

$$10. \text{Определитель: } 34 - 20\lambda, \text{ при } \lambda = [17/10] \text{ ранг равен 3, иначе 4}$$