

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ \frac{9}{8} & 1 & 0 & 0 \\ -\frac{5}{4} & -\frac{38}{75} & 1 & 0 \\ \frac{1}{4} & \frac{86}{75} & \frac{31}{227} & 1 \end{bmatrix}, U = \begin{bmatrix} 8 & 3 & -3 & -7 \\ 0 & -\frac{75}{8} & \frac{43}{8} & \frac{119}{8} \\ 0 & 0 & -\frac{227}{75} & -\frac{616}{75} \\ 0 & 0 & 0 & -\frac{4355}{227} \end{bmatrix}$$

3.

$$\begin{pmatrix} -8 & 0 & -10 \\ -16 & 11 & 9 \\ 2 & 1 & -16 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 4, 3, 6, 5)(2, 7)(8, 9), \text{ord} = 10, \sigma^{-751} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 5 & 7 & 4 & 1 & 6 & 3 & 2 & 9 & 8 \end{pmatrix} = (1, 5, 6, 3, 4)(2, 7)(8, 9)$$

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

$$7. -\frac{27 \cdot 27^n}{43} + \frac{70 \cdot 70^n}{43}$$

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

9. При  $\lambda = 9$

10. Определитель:  $78\lambda - 76$ , при  $\lambda = [38/39]$  ранг равен 3, иначе 4