

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 8 & 1 & 0 & 0 \\ 8 & \frac{16}{17} & 1 & 0 \\ -9 & -\frac{69}{68} & -\frac{1425}{352} & 1 \end{bmatrix}, U = \begin{bmatrix} -1 & -8 & -10 & 3 \\ 0 & 68 & 71 & -15 \\ 0 & 0 & \frac{88}{17} & -\frac{270}{17} \\ 0 & 0 & 0 & -\frac{9067}{176} \end{bmatrix}$$

3.

$$\begin{pmatrix} -17 & -16 & 3 \\ 19 & -20 & 5 \\ -14 & 7 & 5 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 3, 9, 4, 7)(2, 6)(5, 8), ord = 10, \sigma^{-823} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 9 & 6 & 4 & 1 & 8 & 2 & 3 & 5 & 7 \end{pmatrix} = (1, 9, 7, 3, 4)(2, 6)(5, 8)$$

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

7.  $-4 \cdot 12^n + 5 \cdot 15^n$

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

9. При  $\lambda = -1$

10. Определитель:  $63\lambda - 120$ , при  $\lambda = [40/21]$  ранг равен 3, иначе 4