

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 7 & 1 & 0 & 0 \\ -6 & -\frac{19}{22} & 1 & 0 \\ 2 & \frac{7}{22} & \frac{137}{65} & 1 \end{bmatrix}, U = \begin{bmatrix} -1 & -9 & 9 & -5 \\ 0 & 66 & -59 & 40 \\ 0 & 0 & -\frac{65}{22} & \frac{94}{11} \\ 0 & 0 & 0 & -\frac{893}{65} \end{bmatrix}$$

3.

$$\begin{pmatrix} -1 & 0 & 10 \\ 18 & -18 & -13 \\ -3 & -16 & 12 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 9, 8, 6)(2, 4, 7, 5, 3), ord = 20, \sigma^{-827} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 9 & 5 & 7 & 3 & 4 & 1 & 2 & 6 & 8 \end{pmatrix} = (1, 9, 8, 6)(2, 5, 4, 3, 7)$$

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

$$7. \frac{5(-15)^n}{3} - \frac{2(-6)^n}{3}$$

$$8. -1 + 2 * x + 0 * x^2 + 3 * x^3 + 3 * x^4$$

9. При $\lambda = -8$

10. Определитель: $18\lambda + 83$, при $\lambda = [-83/18]$ ранг равен 3, иначе 4