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.

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

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