1.

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

2. $L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -\frac{6}{7} & 1 & 0 & 0 \\ -\frac{4}{7} & 3 & 1 & 0 \\ -\frac{2}{7} & -\frac{57}{11} & -\frac{53}{77} & 1 \end{bmatrix}, U = \begin{bmatrix} -7 & 4 & -1 & 2 \\ 0 & -\frac{11}{7} & \frac{8}{7} & \frac{54}{7} \\ 0 & 0 & -14 & -31 \\ 0 & 0 & 0 & \frac{2095}{77} \end{bmatrix}$

3.

$$\begin{pmatrix} 16 & -19 & -19 \\ -1 & 6 & -13 \\ -9 & -14 & -18 \end{pmatrix}$$

4.

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

5.

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

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

7. $-3(-21)^n + 4(-28)^n$

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

9. При $\lambda = 5$

10. Определитель: $98\lambda - 920$, при $\lambda = [460/49]$ ранг равен 3, иначе 4