

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ \frac{1}{6} & 1 & 0 & 0 \\ -\frac{1}{6} & \frac{17}{10} & 1 & 0 \\ \frac{7}{6} & -\frac{28}{5} & \frac{35}{2} & 1 \end{bmatrix}, U = \begin{bmatrix} 6 & -10 & 8 & 8 \\ 0 & -\frac{10}{3} & -\frac{10}{3} & -\frac{28}{3} \\ 0 & 0 & -2 & \frac{126}{5} \\ 0 & 0 & 0 & -\frac{2563}{5} \end{bmatrix}$$

3.

$$\begin{pmatrix} -8 & -4 & 16 \\ 13 & -11 & -9 \\ 9 & 12 & 12 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 6, 2, 4, 5)(3, 9, 8, 7), \text{ord} = 20, \sigma^{-823} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 2 & 5 & 9 & 1 & 6 & 4 & 3 & 7 & 8 \end{pmatrix} = (1, 2, 5, 6, 4)(3, 9, 8, 7)$$

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

$$7. \frac{8(-8)^n}{11} + \frac{3 \cdot 3^n}{11}$$

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

9. При  $\lambda = 2$

10. Определитель:  $-10\lambda - 544$ , при  $\lambda = [-272/5]$  ранг равен 3, иначе 4