

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 5 & 1 & 0 & 0 \\ 1 & -\frac{3}{19} & 1 & 0 \\ 7 & \frac{35}{19} & \frac{11}{49} & 1 \end{bmatrix}, U = \begin{bmatrix} 1 & 4 & -4 & -1 \\ 0 & -19 & 10 & 6 \\ 0 & 0 & \frac{49}{19} & \frac{94}{19} \\ 0 & 0 & 0 & -\frac{449}{49} \end{bmatrix}$$

3.

$$\begin{pmatrix} -12 & 16 & 8 \\ 18 & -6 & -1 \\ 11 & -20 & -19 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 9)(2, 6, 3)(4, 8)(5, 7), \text{ord} = 6, \sigma^{-787} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 9 & 3 & 6 & 8 & 7 & 2 & 5 & 4 & 1 \end{pmatrix} = (1, 9)(2, 3, 6)(4, 8)(5, 7)$$

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

$$7. -\frac{5(-10)^n}{9} + \frac{14(-28)^n}{9}$$

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

9. При  $\lambda = 0$

10. Определитель:  $200\lambda + 917$ , при  $\lambda = [-917/200]$  ранг равен 3, иначе 4