

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ \frac{3}{4} & 1 & 0 & 0 \\ -\frac{5}{4} & -\frac{17}{3} & 1 & 0 \\ -\frac{1}{2} & -\frac{4}{3} & \frac{25}{41} & 1 \end{bmatrix}, U = \begin{bmatrix} -4 & 6 & -2 & -6 \\ 0 & -\frac{3}{2} & \frac{5}{2} & \frac{25}{2} \\ 0 & 0 & \frac{41}{3} & \frac{193}{3} \\ 0 & 0 & 0 & -\frac{966}{41} \end{bmatrix}$$

3.

$$\begin{pmatrix} 0 & 3 & -16 \\ 17 & 16 & -6 \\ 5 & -13 & 11 \end{pmatrix}$$

4.

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

5.

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

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

$$7. \frac{5(-100)^n}{6} + \frac{20^n}{6}$$

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

9. При  $\lambda = -8$

10. Определитель:  $-10\lambda - 36$ , при  $\lambda = [-18/5]$  ранг равен 3, иначе 4