

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ \frac{5}{2} & 0 & 1 & 0 \\ -\frac{9}{4} & \frac{3}{5} & -\frac{129}{80} & 1 \end{bmatrix}, U = \begin{bmatrix} -4 & -4 & -8 & 9 \\ 0 & -10 & -2 & -4 \\ 0 & 0 & 16 & -\frac{39}{2} \\ 0 & 0 & 0 & -\frac{2527}{160} \end{bmatrix}$$

3.

$$\begin{pmatrix} 13 & -1 & -2 \\ -17 & -9 & -5 \\ 0 & 12 & -6 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 5, 7)(2, 4, 6)(3, 9, 8), \text{ord} = 3, \sigma^{-797} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 5 & 4 & 9 & 6 & 7 & 2 & 1 & 3 & 8 \end{pmatrix} = (1, 5, 7)(2, 4, 6)(3, 9, 8)$$

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

$$7. -\frac{(-4)^n}{14} + \frac{15(-60)^n}{14}$$

$$8. 3 + 0 * x + -2 * x^2 + 2 * x^3 + 2 * x^4$$

9. При  $\lambda = -1$

10. Определитель:  $-45\lambda - 99$ , при  $\lambda = [-11/5]$  ранг равен 3, иначе 4