

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ -1 & 1 & 0 & 0 \\ -9 & 14 & 1 & 0 \\ -10 & \frac{66}{5} & \frac{329}{415} & 1 \end{bmatrix}, U = \begin{bmatrix} 1 & 7 & -10 & -2 \\ 0 & 5 & -18 & -7 \\ 0 & 0 & 166 & 81 \\ 0 & 0 & 0 & \frac{77}{415} \end{bmatrix}$$

3.

$$\begin{pmatrix} -1 & -19 & -4 \\ 3 & 5 & -14 \\ -2 & 11 & -9 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 3, 6, 9, 5, 8)(2, 4, 7), \text{ord} = 6, \sigma^{-811} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 8 & 7 & 1 & 2 & 9 & 3 & 4 & 5 & 6 \end{pmatrix} = (1, 8, 5, 9, 6, 3)(2, 7, 4)$$

$$6. \text{Id}; (1, 2, 6, 4, 3, 7, 5); (1, 3, 2, 7, 6, 5, 4); (1, 4, 5, 6, 7, 2, 3); \\ (1, 5, 7, 3, 4, 6, 2); (1, 6, 3, 5, 2, 4, 7); (1, 7, 4, 2, 5, 3, 6);$$

$$7. \frac{7(-42)^n}{15} + \frac{8 \cdot 48^n}{15}$$

$$8. 0 + 1 * x + 0 * x^2 + 2 * x^3 + -4 * x^4$$

$$9. \text{При } \lambda = -5$$

$$10. \text{Определитель: } 30\lambda - 160, \text{ при } \lambda = [16/3] \text{ ранг равен 3, иначе 4}$$