

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ \frac{1}{7} & 1 & 0 & 0 \\ \frac{2}{7} & -\frac{73}{58} & 1 & 0 \\ -\frac{10}{7} & \frac{46}{29} & \frac{278}{297} & 1 \end{bmatrix}, U = \begin{bmatrix} 7 & 5 & 6 & -9 \\ 0 & \frac{58}{7} & \frac{22}{7} & \frac{37}{7} \\ 0 & 0 & \frac{297}{29} & \frac{825}{58} \\ 0 & 0 & 0 & -\frac{347}{9} \end{bmatrix}$$

3.

$$\begin{pmatrix} 0 & 12 & -18 \\ -3 & -7 & -3 \\ -14 & 6 & 19 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 2, 8, 3, 6)(4, 7, 9, 5), \text{ord} = 20, \sigma^{-787} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 3 & 6 & 2 & 7 & 4 & 8 & 9 & 1 & 5 \end{pmatrix} = (1, 3, 2, 6, 8)(4, 7, 9, 5)$$

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

$$7. -\frac{2(-12)^n}{3} + \frac{5(-30)^n}{3}$$

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

9. При $\lambda = -3$

10. Определитель: $560 - 63\lambda$, при $\lambda = [80/9]$ ранг равен 3, иначе 4