

1.

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

$$2. L = \begin{bmatrix} 1 & 0 & 0 & 0 \\ \frac{4}{9} & 1 & 0 & 0 \\ \frac{1}{9} & -\frac{55}{14} & 1 & 0 \\ 0 & \frac{45}{7} & \frac{18}{17} & 1 \end{bmatrix}, U = \begin{bmatrix} -9 & -10 & 8 & -4 \\ 0 & -\frac{14}{9} & -\frac{5}{9} & -\frac{38}{9} \\ 0 & 0 & -\frac{85}{14} & -\frac{106}{7} \\ 0 & 0 & 0 & \frac{887}{17} \end{bmatrix}$$

3.

$$\begin{pmatrix} 16 & -6 & 0 \\ 15 & 3 & 13 \\ -1 & -12 & -14 \end{pmatrix}$$

4.

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

5.

$$\sigma = (1, 2, 5)(3, 9, 4, 7, 6, 8), \text{ord} = 6, \sigma^{-739} = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 5 & 1 & 8 & 9 & 2 & 7 & 4 & 6 & 3 \end{pmatrix} = (1, 5, 2)(3, 8, 6, 7, 4, 9)$$

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

$$7. \frac{2(-24)^n}{5} + \frac{3 \cdot 36^n}{5}$$

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

9. При  $\lambda = -4$

10. Определитель:  $115\lambda - 967$ , при  $\lambda = [967/115]$  ранг равен 3, иначе 4