

# 線型代数学・同演習 A

7 月 14 日分 演習問題

1.

$$\begin{aligned} (1) & \begin{pmatrix} 5 & 2 & -1 \\ 3 & 5 & 7 \\ 3 & -14 & -12 \end{pmatrix}, \quad \frac{1}{19} \begin{pmatrix} 5 & 2 & -1 \\ 3 & 5 & 7 \\ 3 & -14 & -12 \end{pmatrix} \\ (2) & \begin{pmatrix} 1 & 2 & 1 \\ 1 & 4 & 3 \\ -5 & -18 & -11 \end{pmatrix}, \quad \frac{1}{2} \begin{pmatrix} 1 & 2 & 1 \\ 1 & 4 & 3 \\ -5 & -18 & -11 \end{pmatrix} \\ (3) & \begin{pmatrix} -1 & 2 & -5 \\ -5 & -1 & -3 \\ 1 & 2 & -2 \end{pmatrix}, \quad \frac{1}{11} \begin{pmatrix} -1 & 2 & -5 \\ -5 & -1 & -3 \\ 1 & 2 & -2 \end{pmatrix} \\ (4) & \begin{pmatrix} -1 & -3 & 1 & 3 \\ -4 & 1 & 4 & -1 \\ -4 & 2 & 2 & -4 \\ 0 & -3 & -4 & -2 \end{pmatrix}, \quad -\frac{1}{26} \begin{pmatrix} -1 & -3 & 1 & 3 \\ -4 & 1 & 4 & -1 \\ -4 & 2 & 2 & -4 \\ 0 & -3 & -4 & -2 \end{pmatrix} \end{aligned}$$

2.  $A\tilde{A} = (\det A)E_n$  の両辺に  $\det$  をとる .

3. (1)  $2a - 7$ , (2)  $a = 3, 4$  ( $2a - 7 = \pm 1$  となる  $a$ )

4.

$$(1) \mathbf{x} = \frac{1}{6} \begin{pmatrix} 79 \\ -39 \\ 5 \end{pmatrix}, \quad \frac{1}{2} \begin{pmatrix} -13 \\ -14 \\ 1 \end{pmatrix}, \quad (3) \frac{1}{8} \begin{pmatrix} 10 \\ -1 \\ 16 \end{pmatrix}, \quad (4) \frac{1}{7} \begin{pmatrix} -10 \\ -10 \\ 14 \\ -18 \end{pmatrix}.$$

5. (1)  $3x - 3y - z = 7$ , (2)  $4x - 9y + 21z = -11$ , (3)  $4x + 11y + 4z = -31$ .

6.

$$(1) \begin{pmatrix} a^n & 0 \\ 0 & b^n \end{pmatrix}, \quad (2) \begin{pmatrix} 1 & 0 \\ nx & 1 \end{pmatrix}, \quad (3) \begin{pmatrix} a^n & 0 \\ \frac{a^n - c^n}{a - c} b & c^n \end{pmatrix}$$