

[1]

$$\begin{pmatrix} 18 \\ -14 \end{pmatrix}$$

[2] 標準形は

$$\begin{pmatrix} 1 & 0 & -7/5 \\ 0 & 1 & 3/5 \\ 0 & 0 & 0 \end{pmatrix}$$

ゆえに $\text{rank } A = 2$.

[3]

$$\begin{pmatrix} 7 & 4 & -2 \\ -2 & -1 & 1 \\ -3 & -2 & 1 \end{pmatrix}$$

[4]

$$\begin{pmatrix} x \\ y \\ z \\ w \end{pmatrix} = t \begin{pmatrix} 1 \\ -1 \\ 1 \\ 0 \end{pmatrix} + s \begin{pmatrix} -4 \\ -1 \\ 0 \\ 1 \end{pmatrix} + \begin{pmatrix} 1/7 \\ 5/7 \\ 0 \\ 0 \end{pmatrix}, \quad t, s \text{ は実数}$$

[5]

$$\begin{cases} a = -3 & \implies \text{解をもたない} \\ a = -2 & \implies \text{解は無数} \\ a \neq -2, -3 & \implies \text{解は唯一つ} \end{cases}$$