

2023.07.11.

$$\begin{cases} x + y + z = -3 \\ 2x + 3y + 5z = -10 \quad \dots (*) \\ 3x + 2y = -5 \end{cases}$$

$$\left(\begin{array}{ccc|c} 1 & 1 & 1 & -3 \\ 2 & 3 & 5 & -10 \\ 3 & 2 & 0 & -5 \end{array} \right) \begin{array}{l} \textcircled{2} + \textcircled{1} \times (-2) \\ \textcircled{3} + \textcircled{1} \times (-3) \end{array} \longrightarrow \left(\begin{array}{ccc|c} 1 & 1 & 1 & -3 \\ 0 & 1 & 3 & -4 \\ 0 & -1 & -3 & 4 \end{array} \right)$$

(*) の係数拡大行列

$$\begin{array}{l} \textcircled{1} + \textcircled{2} \times (-1) \\ \textcircled{3} + \textcircled{2} \end{array} \longrightarrow \left(\begin{array}{ccc|c} 1 & 0 & -2 & 1 \\ 0 & 1 & 3 & -4 \\ 0 & 0 & 0 & 0 \end{array} \right) \text{ rref.}$$

x y $z = c$
 c 任意定数

$$\Leftrightarrow \begin{cases} x = 2c + 1 \\ y = -3c - 4 \\ z = c \end{cases} \Leftrightarrow \begin{pmatrix} x \\ y \\ z \end{pmatrix} = c \begin{pmatrix} 2 \\ -3 \\ 1 \end{pmatrix} + \begin{pmatrix} 1 \\ -4 \\ 0 \end{pmatrix} //$$