

XI 演習 3.3 (教科書 66 ページ) (3.4) 式, すなわち

$$\left( \begin{array}{cccc|c} 1 & 2 & 3 & 4 & 0 \\ 2 & 3 & 4 & 5 & 0 \\ 3 & 5 & 5 & 7 & 0 \end{array} \right) \rightarrow \cdots \rightarrow \left( \begin{array}{cccc|c} 1 & 0 & 0 & -1 & 0 \\ 0 & 1 & 0 & 1 & 0 \\ 0 & 0 & 1 & 1 & 0 \end{array} \right)$$

の行基本変形をしてみましょう.

解答

$$\begin{aligned} & \left( \begin{array}{cccc|c} 1 & 2 & 3 & 4 & 0 \\ 2 & 3 & 4 & 5 & 0 \\ 3 & 5 & 5 & 7 & 0 \end{array} \right) \xrightarrow{(i)} \left( \begin{array}{cccc|c} 1 & 2 & 3 & 4 & 0 \\ 0 & -1 & -2 & -3 & 0 \\ 0 & -1 & -4 & -5 & 0 \end{array} \right) \xrightarrow{(ii)} \left( \begin{array}{cccc|c} 1 & 2 & 3 & 4 & 0 \\ 0 & 1 & 2 & 3 & 0 \\ 0 & -1 & -4 & -5 & 0 \end{array} \right) \\ & \xrightarrow{(iii)} \left( \begin{array}{cccc|c} 1 & 0 & -1 & -2 & 0 \\ 0 & 1 & 2 & 3 & 0 \\ 0 & 0 & -2 & -2 & 0 \end{array} \right) \xrightarrow{(iv)} \left( \begin{array}{cccc|c} 1 & 0 & -1 & -2 & 0 \\ 0 & 1 & 2 & 3 & 0 \\ 0 & 0 & 1 & 1 & 0 \end{array} \right) \xrightarrow{(v)} \left( \begin{array}{cccc|c} 1 & 0 & 0 & -1 & 0 \\ 0 & 1 & 0 & 1 & 0 \\ 0 & 0 & 1 & 1 & 0 \end{array} \right) \end{aligned}$$

と行基本変形

$$(i) \quad 2r_+ = 1r \times (-2), \quad 3r_+ = 1r \times (-3)$$

$$(ii) \quad 2r \times = (-1)$$

$$(iii) \quad 1r_+ = 2r \times (-2), \quad 3r_+ = 2r$$

$$(iv) \quad 3r \times = \left( -\frac{1}{2} \right)$$

$$(v) \quad 1r_+ = 3r, \quad 2r_+ = 3r \times (-2)$$

を施します.