

中2~第16回 x, y, z の連立方程式 (連立3元1次方程式) ~

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例題 次の連立方程式を解きなさい。

$$(1) \begin{cases} x+y=3 \\ y+z=2 \\ z+x=7 \end{cases} \rightarrow z=7-x$$

$$\begin{aligned} y+(7-x) &= 2 \\ -x+y &= -5 \end{aligned}$$

$$\begin{cases} x+y=3 \\ -x+y=-5 \end{cases}$$

$$\begin{aligned} x+y &= 3 \\ +) -x+y &= -5 \\ \hline 2y &= -2 \\ y &= -1 \end{aligned}$$

$$x + \underset{-1}{y} = 3$$

$$x - 1 = 3$$

$$\underline{x = 4}$$

$$z = 7 - \underset{4}{x}$$

$$z = 7 - 4$$

$$\underline{z = 3}$$

$$\underline{x=4, y=-1, z=3} \quad (2)$$

$$\begin{cases} 3x-y-2z=11 \\ 2x+3y+z=-6 \\ 5x-2y+3z=13 \end{cases} \quad \begin{matrix} \text{代入!} \\ \text{代入!} \end{matrix} \quad \underline{x=2, y=-3, z=-1}$$

$$\begin{aligned} 3x-y-2(-6-2x-3y) &= 11 \\ 3x-y+12+4x+6y &= 11 \\ 7x+5y &= -1 \end{aligned}$$

$$\begin{aligned} 5x-2y+3(-6-2x-3y) &= 13 \\ 5x-2y-18-6x-9y &= 13 \\ -x-11y &= 31 \end{aligned}$$

$$\begin{cases} 7x+5y=-1 \\ -x-11y=31 \end{cases} \rightarrow \begin{matrix} 7x+5y=-1 \\ -7x-77y=217 \end{matrix}$$

$$\begin{aligned} 7x+5y &= -1 \\ +) -7x-77y &= 217 \\ \hline -72y &= 216 \end{aligned}$$

$$y = \underset{-3}{-3}$$

$$\begin{aligned} -x-11(\underset{-3}{y}) &= 31 \\ -x+33 &= 31 \\ -x &= -2 \end{aligned}$$

$$\underline{x = 2}$$

$$z = -6 - 2(\underset{2}{x}) - 3(\underset{-3}{y})$$

$$z = -6 - 4 + 9$$

$$\underline{z = -1}$$