

連立方程式 [いろいろな連立方程式(1)]

<演習問題>

次の連立方程式を解け。

$$(1) \begin{cases} x + 2(x + 2y) = 1 \\ -3x + 8y = -25 \end{cases}$$

$$(4) \begin{cases} 2x + 5y = 12 \\ 4x - (x - 2y) = 7 \end{cases}$$

$$(2) \begin{cases} 3x + 4y = 5 \\ 5x - 3(x + y) = -8 \end{cases}$$

$$(5) \begin{cases} 3x - 2(x - 1) = 3y - 2 \\ -5x + 2y = 7 \end{cases}$$

$$(3) \begin{cases} 2x + 5y = -1 \\ -3x + 8(y + 1) = -6 \end{cases}$$

$$(6) \begin{cases} 4x - 5y = 21 \\ 6x - 19 = 2(x - 1) + y \end{cases}$$

連立方程式 [いろいろな連立方程式(1)]

<演習問題>

次の連立方程式を解け。

$$(1) \begin{cases} x + 2(x + 2y) = 1 \\ -3x + 8y = -25 \end{cases}$$

$$\begin{cases} x + 2(x + 2y) = 1 & (1) \\ -3x + 8y = -25 & (2) \end{cases}$$

(1) より

$$x + 2x + 4y = 1$$

$$3x + 4y = 1 \quad (1)'$$

(1)' + (2)

$$4y + 8y = 1 + (-25)$$

$$y = -2$$

これを(2)に代入して

$$-3x + 8 \times (-2) = -25$$

$$x = 3$$

$$x = 3, y = -2$$

$$(2) \begin{cases} 3x + 4y = 5 \\ 5x - 3(x + y) = -8 \end{cases}$$

$$\begin{cases} 3x + 4y = 5 & (1) \\ 5x - 3(x + y) = -8 & (2) \end{cases}$$

(2) より

$$5x - 3x - 3y = -8$$

$$2x - 3y = -8 \quad (2)'$$

(1) × 3 + (2)' × 4

$$3 \times 3x + 4 \times 2x = 3 \times 5 + 4 \times (-8)$$

$$x = -1$$

これを(1)に代入して

$$3 \times (-1) + 4y = 5$$

$$y = 2$$

$$x = -1, y = 2$$

$$(3) \begin{cases} 2x + 5y = -1 \\ -3x + 8(y + 1) = -6 \end{cases}$$

$$\begin{cases} 2x + 5y = -1 & (1) \\ -3x + 8(y + 1) = -6 & (2) \end{cases}$$

(2) より

$$-3x + 8y + 8 = -6$$

$$-3x + 8y = -14 \quad (2)'$$

(1) × 3 + (2)' × 2

$$3 \times 2x + 2 \times 8y = 3 \times (-1) + 2 \times (-14)$$

$$y = -1$$

これを(1)に代入して

$$2x + 5 \times (-1) = -1$$

$$x = 2$$

$$x = 2, y = -1$$

$$(4) \begin{cases} 2x + 5y = 12 \\ 4x - (x - 2y) = 7 \end{cases}$$

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

(2) より

$$4x - x + 2y = 7$$

$$3x + 2y = 7 \quad (2)'$$

(1) × 3 - (2)' × 2

$$3 \times 5y - 2 \times 2y = 3 \times 12 - 2 \times 7$$

$$y = 2$$

これを(1)に代入して

$$2x + 5 \times 2 = 12$$

$$x = 1$$

$$x = 1, y = 2$$

$$(5) \begin{cases} 3x - 2(x - 1) = 3y - 2 \\ -5x + 2y = 7 \end{cases}$$

$$\begin{cases} 3x - 2(x - 1) = 3y - 2 & (1) \\ -5x + 2y = 7 & (2) \end{cases}$$

(1) より

$$3x - 2x + 2 = 3y - 2$$

$$x = 3y - 4 \quad (1)'$$

(1)' を(2)に代入して

$$-5(3y - 4) + 2y = 7$$

$$y = 1$$

これを(1)'に代入して

$$x = 3 \times 1 - 4$$

$$x = -1$$

$$x = -1, y = 1$$

$$(6) \begin{cases} 4x - 5y = 21 \\ 6x - 19 = 2(x - 1) + y \end{cases}$$

$$\begin{cases} 4x - 5y = 21 & (1) \\ 6x - 19 = 2(x - 1) + y & (2) \end{cases}$$

(2) より

$$6x - 19 = 2x - 2 + y$$

$$y = 4x - 17 \quad (2)'$$

(2)' を(1)に代入して

$$4x - 5(4x - 17) = 21$$

$$x = 4$$

これを(2)'に代入して

$$y = 4 \times 4 - 17$$

$$y = -1$$

$$x = 4, y = -1$$