

連立方程式③ 解答と解説

1 解答 (1) $x=7, y=3$ (2) $x=5, y=-1$ (3) $x=1, y=4$

(4) $x=5, y=-3$ (5) $x=-8, y=18$ (6) $x=3, y=-4$

(7) $x=15, y=-9$ (8) $x=-12, y=8$ (9) $x=-10, y=-7$

(1)
$$\begin{cases} 2x+3y=23 & \text{..... ①} \\ 3x-5y=6 & \text{..... ②} \end{cases}$$

$$\begin{array}{r} \text{①} \times 3 \quad 6x+9y=69 \\ \text{②} \times 2 \quad -) \quad 6x-10y=12 \\ \hline 19y=57 \end{array}$$

$y=3$
 $y=3$ を ① に代入すると $2x+3 \times 3=23$
 $x=7$

よって $x=7, y=3$

$$\begin{cases} 7x+2y=33 & \text{..... ①} \\ 4x+5y=15 & \text{..... ②} \end{cases}$$

$$\begin{array}{r} \text{①} \times 5 \quad 35x+10y=165 \\ \text{②} \times 2 \quad -) \quad 8x+10y=30 \\ \hline 27x=135 \end{array}$$

$x=5$
 $x=5$ を ① に代入すると $7 \times 5+2y=33$
 $y=-1$

よって $x=5, y=-1$

$$\begin{cases} 4x+3y=16 & \text{..... ①} \\ 5x+4y=21 & \text{..... ②} \end{cases}$$

$$\begin{array}{r} \text{①} \times 4 \quad 16x+12y=64 \\ \text{②} \times 3 \quad -) \quad 15x+12y=63 \\ \hline x=1 \end{array}$$

$x=1$ を ① に代入すると $4 \times 1+3y=16$
 $y=4$

よって $x=1, y=4$

(4)
$$\begin{cases} 5x+4y=13 & \text{..... ①} \\ 2x-7y=31 & \text{..... ②} \end{cases}$$

$$\begin{array}{r} \text{①} \times 2 \quad 10x+8y=26 \\ \text{②} \times 5 \quad -) \quad 10x-35y=155 \\ \hline 43y=-129 \end{array}$$

$y=-3$
 $y=-3$
 $y=-3$ を ① に代入すると $5x+4 \times (-3)=13$
 $x=5$

よって $x=5, y=-3$

$$\begin{cases} 7x+5y=34 & \text{..... ①} \\ 3x+2y=12 & \text{..... ②} \end{cases}$$

$$\begin{array}{r} \text{①} \times 2 \quad 14x+10y=68 \\ \text{②} \times 5 \quad -) \quad 15x+10y=60 \\ \hline -x=8 \end{array}$$

$x=-8$
 $x=-8$
 $x=-8$ を ① に代入すると $7 \times (-8)+5y=34$
 $y=18$

よって $x=-8, y=18$

$$\begin{cases} 7x+3y=9 & \text{..... ①} \\ 2x-5y=26 & \text{..... ②} \end{cases}$$

$$\begin{array}{r} \text{①} \times 5 \quad 35x+15y=45 \\ \text{②} \times 3 \quad +) \quad 6x-15y=78 \\ \hline 41x=123 \end{array}$$

$x=3$
 $x=3$
 $x=3$ を ① に代入すると $7 \times 3+3y=9$
 $y=-4$

よって $x=3, y=-4$

$$\begin{cases} 3x-2y=63 & \text{..... ①} \\ 4x-3y=87 & \text{..... ②} \end{cases}$$

$$\begin{array}{r} \text{①} \times 3 \quad 9x-6y=189 \\ \text{②} \times 2 \quad -) \quad 8x-6y=174 \\ \hline x=15 \end{array}$$

$$x=15 \text{ を } \textcircled{1} \text{ に代入すると } \quad 3 \times 15 - 2y = 63$$

$$y = -9$$

よって $x=15, y=-9$

$$(8) \quad \begin{cases} 3x - 4y = -68 & \text{..... } \textcircled{1} \\ 7x + 3y = -60 & \text{..... } \textcircled{2} \end{cases}$$

$$\begin{array}{r} \textcircled{1} \times 3 \quad 9x - 12y = -204 \\ \textcircled{2} \times 4 \quad +) 28x + 12y = -240 \\ \hline 37x \quad \quad = -444 \end{array}$$

$$x = -12 \text{ を } \textcircled{1} \text{ に代入すると}$$

$$3 \times (-12) - 4y = -68$$

$$y = 8$$

よって $x = -12, y = 8$

$$(9) \quad \begin{cases} -8x + 9y = 17 & \text{..... } \textcircled{1} \\ 10x - 7y = -51 & \text{..... } \textcircled{2} \end{cases}$$

$$\begin{array}{r} \textcircled{1} \times 10 \quad -80x + 90y = 170 \\ \textcircled{2} \times 8 \quad +) 80x - 56y = -408 \\ \hline 34y = -238 \end{array}$$

$$y = -7 \text{ を } \textcircled{1} \text{ に代入すると}$$

$$-8x + 9 \times (-7) = 17$$

$$x = -10$$

よって $x = -10, y = -7$

2 **解答** (1) $x=2, y=3$ (2) $x=-2, y=2$ (3) $x=4, y=-1$
 (4) $x=0, y=-2$ (5) $x=\frac{1}{2}, y=-2$ (6) $x=\frac{3}{4}, y=\frac{3}{2}$

$$(1) \quad \begin{cases} 2x - 3y = -5 & \text{..... } \textcircled{1} \\ 3x + 2y = 12 & \text{..... } \textcircled{2} \end{cases}$$

$$\begin{array}{r} \textcircled{1} \times 3 \quad 6x - 9y = -15 \\ \textcircled{2} \times 2 \quad -) 6x + 4y = 24 \\ \hline -13y = -39 \end{array}$$

$$y = 3$$

$$y = 3 \text{ を } \textcircled{1} \text{ に代入すると}$$

$$2x - 9 = -5$$

$$x = 2$$

よって $x=2, y=3$

$$(2) \quad \begin{cases} 5x - 2y = -14 & \text{..... } \textcircled{1} \\ 4x + 5y = 2 & \text{..... } \textcircled{2} \end{cases}$$

$$\begin{array}{r} \textcircled{1} \times 5 \quad 25x - 10y = -70 \\ \textcircled{2} \times 2 \quad +) 8x + 10y = 4 \\ \hline 33x \quad \quad = -66 \end{array}$$

$$x = -2$$

$$x = -2 \text{ を } \textcircled{2} \text{ に代入すると}$$

$$-8 + 5y = 2$$

$$y = 2$$

よって $x = -2, y = 2$

$$(3) \quad \begin{cases} 3x + 7y = 5 & \text{..... } \textcircled{1} \\ -4x - 5y = -11 & \text{..... } \textcircled{2} \end{cases}$$

$$\begin{array}{r} \textcircled{1} \times 4 \quad 12x + 28y = 20 \\ \textcircled{2} \times 3 \quad +) -12x - 15y = -33 \\ \hline 13y = -13 \end{array}$$

$$y = -1$$

$$y = -1 \text{ を } \textcircled{1} \text{ に代入すると}$$

$$3x - 7 = 5$$

$$x = 4$$

よって $x=4, y=-1$

$$(4) \quad \begin{cases} 2x - 3y = 6 & \text{..... } \textcircled{1} \\ 7x - 4y = 8 & \text{..... } \textcircled{2} \end{cases}$$

$$\begin{array}{r} \textcircled{1} \times 4 \quad 8x - 12y = 24 \\ \textcircled{2} \times 3 \quad -) 21x - 12y = 24 \\ \hline -13x \quad \quad = 0 \end{array}$$

$$x = 0$$

$$x = 0 \text{ を } \textcircled{1} \text{ に代入すると}$$

$$0 - 3y = 6$$

$$y = -2$$

よって $x=0, y=-2$

$$(5) \quad \begin{cases} 4x + 3y = -4 & \text{..... } \textcircled{1} \\ 6x - 11y = 25 & \text{..... } \textcircled{2} \end{cases}$$

$$\begin{array}{r} \textcircled{1} \times 3 \quad 12x + 9y = -12 \\ \textcircled{2} \times 2 \quad -) \quad 12x - 22y = 50 \\ \hline 31y = -62 \end{array}$$

$$y = -2$$

$y = -2$ を ① に代入すると

$$4x - 6 = -4$$

$$x = \frac{1}{2}$$

よって $x = \frac{1}{2}$, $y = -2$

$$(6) \begin{cases} 10x + 3y = 12 & \dots\dots \textcircled{1} \\ -12x - 4y = -15 & \dots\dots \textcircled{2} \end{cases}$$

$$\textcircled{1} \times 4 \quad 40x + 12y = 48$$

$$\textcircled{2} \times 3 \quad +) \quad -36x - 12y = -45$$

$$\hline 4x = 3$$

$$x = \frac{3}{4}$$

$x = \frac{3}{4}$ を ② に代入すると

$$-9 - 4y = -15$$

$$y = \frac{3}{2}$$

よって $x = \frac{3}{4}$, $y = \frac{3}{2}$