SIMULTANEOUS LINEAR EQUATIONS

EXERCISE

Solve

1. $\begin{cases} 3x + 2y = 16 & ① \\ 9x + 4y = 38 & ② \end{cases}$

2. $\begin{cases} 3x - 2y = 10 & ① \\ 5x - 3y = 17 & ② \end{cases}$

3. $\begin{cases} 4x + 5y = 20 & ① \\ 2x - 2y = 1 & ② \end{cases}$

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

5. $\begin{cases} 5x - 2y = 20 & ① \\ 3x - 6y = 36 & ② \end{cases}$

6. $\begin{cases} 3x + 2y = -3 & ① \\ 5x - 8y = -22 & ② \end{cases}$

SIMULTANEOUS LINEAR EQUATIONS — EXERCISE

1)

$3x + 2y = 16$ ①

$9x + 4y = 38$ ②

① ×2 $6x + 4y = 32$ ③

② − ③ $3x = 6$

$x = \frac{6}{3}$

$\underline{x = 2}$

Substitute for x in ①

$3(2) + 2y = 16$

$6 + 2y = 16$

$2y = 16 - 6$

$2y = 10$

$y = \frac{10}{2}$

$\underline{y = 5}$

Solution:

$$\begin{cases} x = 2 \\ y = 5 \end{cases}$$

2)

$3x - 2y = 10$ ①

$5x - 3y = 17$ ②

① ×3 $9x - 6y = 30$ ③

② ×2 $10x - 6y = 34$ ④

④ − ③ $\underline{x = 4}$

Substitute for x in ①

$3(4) - 2y = 10$

$12 - 2y = 10$

$-2y = 10 - 12$

$-2y = -2$

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

$\underline{y = +1}$

Solution:

$$\begin{cases} x = 4 \\ y = 1 \end{cases}$$

SIMULTANEOUS LINEAR EQUATIONS — EXERCISE

3.) $4x + 5y = 20$ ①

$2x - 2y = 1$ ②

① ×2 $8x + 10y = 40$ ③

② ×5 $10x - 10y = 5$ ④

③ + ④ $18x = 45$

$x = \frac{45}{18} = \frac{5}{2}$

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

Substitute for x in ①

$4(\frac{5}{2}) + 5y = 20$

$10 + 5y = 20$

$5y = 20 - 10$

$5y = 10$

$y = \frac{10}{5}$

$y = 2$

Solution:

$\begin{cases} x = 2\frac{1}{2} \\ y = 2 \end{cases}$

4) $2x + y = 4$ ①

$3x + 4y = 1$ ②

① ×4 $8x + 4y = 16$ ③

③ − ② $5x = 15$

$x = \frac{15}{5}$

$x = 3$

Substitute for x in ①

$2(3) + y = 4$

$6 + y = 4$

$y = 4 - 6$

$y = -2$

Solution:

$\begin{cases} x = 3 \\ y = -2 \end{cases}$

SIMULTANEOUS LINEAR EQUATIONS — EXERCISE

5.) $5x - 2y = 20$ ①

$3x - 6y = 36$ ②

①×3 $15x - 6y = 60$ ③

③ − ② $12x = 24$

$x = \frac{24}{12}$

$x = 2$

Substitute for x in ①

$5(2) - 2y = 20$

$10 - 2y = 20$

$-2y = 20 - 10$

$-2y = 10$

$y = \frac{10}{-2}$

$y = -5$

Solution:

$\begin{cases} x = 2 \\ y = -5 \end{cases}$

6.) $3x + 2y = -3$ ①

$5x - 8y = -22$ ②

①×4 $12x + 8y = -12$ ③

② + ③ $17x = -34$

$x = \frac{-34}{17}$

$x = -2$

Substitute for x in ①

$3(-2) + 2y = -3$

$-6 + 2y = -3$

$2y = -3 + 6$

$2y = 3$

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

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

Solution:

$\begin{cases} x = -2 \\ y = 1\frac{1}{2} \end{cases}$