Simultaneous Equations

GCE O Levels E-Maths

What is a Simultaneous Equation?

- Equations with more than one unknown variable:

  $x + y = 10$

  $x - y = 4$

- Finding x and y values that satisfy both equations
- 2 methods
  - Elimination
  - Substitution

Elimination Method

Question 1:

x + y = 10 — (1)

x - y = 4 — (2)

(1) + (2):
x + y + x - y = 10 + 4
(x + x) + (y - y) = 14
2x = 14 → x = 7

Answer: x = 7, y = 3

Sub into (1)
7 + y = 10 → 7 + y - 7 = 10 - 7
y = 3

Homework (Question 2):

Elimination Method

Using the elimination method, solve:

$$3x + 2y = 16 \text{ —(1)}$$

$$2x + y = 1 \text{ — (2)}$$

Substitution Method

Question 1:

x + y = 10 — (1)

x - y = 4 — (2)

Solve (2): x - y = 4 → x = 4 + y — (3)

Sub (3) into (1): (4 + y) + y = 10

2y = 10 - 4

y = 3

Sub y = 3 into (1)

x + 3 = 10 → x = 10 - 3 = 7

Answer: x = 7, y = 3

Homework (Question 3):

Using the substitution method, solve:

$$2x + 3y = 12 \text{ — (1)}$$

$$x - y = 1 \text{ — (2)}$$