Simultaneous Equations - Lesson 2

Simultaneous Equations 2 (Multiplying 1 Equation)

LI

- Solve a pair of equations for 2 missing variables.

SC

- Multiply 1 equation to get same numerical coefficients.
- 2-step equations.

Jan 10-12:11

Reminder

- Signs same - subtract equations.
- Signs different - add equations.

Example 1

Solve,

$$4x + 2y = 2 \quad (1)$$

$$-x + 3y = 3 \quad (2) \quad \times 4$$

$$4x + 2y = 2 \quad (1)$$

$$-4x + 12y = 12 \quad (3)$$

Signs of x are different, so add : (1) + (3)

$$14y = 14$$

$$\Rightarrow \quad y = 1$$

Substitute $y = 1$ into (2) :

$$-x + 3y = 3$$

$$\therefore \quad -x + 3(1) = 3$$

$$\Rightarrow \quad -x + 3 = 3$$

$$\Rightarrow \quad -x = 0$$

$$\Rightarrow \quad x = 0$$

$$\therefore \quad \boxed{x = 0, y = 1}$$

Dec 3-08:31

Example 2

Solve,

$$2x - y = 4 \quad (1) \quad \times 3$$

$$5x + 3y = 21 \quad (2)$$

$$6x - 3y = 12 \quad (3)$$

$$5x + 3y = 21 \quad (2)$$

Signs of y are different, so add : (3) + (2)

$$11x = 33$$

$$\Rightarrow \quad x = 3$$

Substitute $x = 3$ into (1) :

$$2x - y = 4$$

$$\therefore \quad 2(3) - y = 4$$

$$\Rightarrow \quad 6 - y = 4$$

$$\Rightarrow \quad -y = -2$$

$$\Rightarrow \quad y = 2$$

$$\therefore \quad \boxed{x = 3, y = 2}$$

Nov 3-08:10

Questions

Solve each of the following pairs of equations by elimination.

a $x - 2y = 1$
$2x + y = 7$

b $4x + 3y = 11$
$x - y = 8$

c $x - 5y = 13$
$3x - y = -9$

d $2x + y = 10$
$3x - 4y = 26$

e $a - 3b = 5$
$5a + 2b = -9$

f $4p - q = 17$
$3p - 2q = 19$

g $-2s + 5t = 2$
$4s - 3t = -22$

h $3c - d = -3$
$2c + 4d = 5$

May 18-10:04

Answers

Solve each of the following pairs of equations by elimination.

a $x - 2y = 1$
$2x + y = 7$

b $4x + 3y = 11$
$x - y = 8$

c $x - 5y = 13$
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h $3c - d = -3$
$2c + 4d = 5$

a $x = 3, y = 1$

b $x = 5, y = -3$

c $x = -\frac{29}{7}, y = -\frac{24}{7}$

d $x = 6, y = -2$

e $a = -1, b = -2$

f $p = 3, q = -5$

g $s = -\frac{52}{7}, t = -\frac{18}{7}$

h $c = -\frac{1}{2}, d = \frac{3}{2}$

May 18-10:04