

Ch1.9 Solving Linear Systems by using Elimination page 96

add
or
subtract
eqs

The sum of two numbers is 377 and their difference is 107. Find the numbers

$$\begin{array}{l} \textcircled{1} \quad x + y = 377 \\ \textcircled{2} \quad x - y = 107 \\ \hline \textcircled{1} - \textcircled{2} \quad 2y = 270 \\ \therefore \quad \frac{2y}{2} = \frac{270}{2} \\ \quad \quad y = 135 \end{array}$$

$$\begin{aligned} |y - (-1y) \\ = |y + 1y \\ = 2y \end{aligned}$$

Solve: for x

$$\begin{aligned} \textcircled{1} \quad x + y &= 377 \\ x + 135 &= 377 \\ x &= 377 - 135 = 242 \\ & \quad (242, 135) \end{aligned}$$

Check (242, 135)

①

$$\begin{array}{l} \text{LS} \\ = 242 + 135 \\ = 377 \end{array} \quad \begin{array}{l} \text{RS} \\ = 377 \end{array}$$

LS = RS

②

$$\begin{array}{l} \text{LS} \\ = 242 - 135 \\ = 107 \end{array} \quad \begin{array}{l} \text{RS} \\ = 107 \end{array}$$

LS = RS

∴ (242, 135) satisfies
both eq and is
the sol. to the system.

Ex. 2

$$\textcircled{1} \quad 2x - 3y = 10$$

$$\textcircled{2} \quad x - 2y = 3$$

$$\begin{array}{r} -3 - (-2) \\ -3 + 2 \\ -1 \end{array}$$

~~$$\textcircled{1} + \textcircled{2} \quad 3x - 5y = 13$$~~

~~$$\textcircled{1} - \textcircled{2} \quad x - 1y = 7$$~~

$$\textcircled{1} \quad 2x - 3y = 10$$

$$\textcircled{2} \times 2 \quad 2x - 4y = 6$$

$$\textcircled{1} - \textcircled{2} \quad 0 + 1y = 4$$

$$y = 4$$

Sub $y = 4$ into $\textcircled{1}$

$$2x - 3(4) = 10$$

$$2x - 12 = 10$$

$$2x = 22$$

$$x = 11$$

$$(11, 4)$$

Check (11, 4)

①

$$\begin{aligned} & \frac{LS}{=} \\ & = 2x - 3y \\ & = 22 - 12 \\ & = 10 \quad LS = RS \end{aligned}$$

$$\frac{RS}{=} = 10$$

②

$$\begin{aligned} & \frac{LS}{=} \\ & = x - 2y \\ & = 11 - 8 \\ & = 3 \quad LS = RS \end{aligned}$$

$$\frac{RS}{=} = 3$$

$\therefore (11, 4)$ is the solution.

1.9

p101

q1-10, (2,6,10 odd letters)

look ahead to applications

check web for app worksheet

1.8

Solve by Substitution - Review

p. 92
#8c)

$$\begin{aligned} \textcircled{1} & x = 4 - y \\ \textcircled{2} & 2y + 2x = 8 \end{aligned}$$

T? Is one of the equations isolated? **YES**

S1 sub $\textcircled{1}$ into $\textcircled{2}$ =====

$$2y + 2(4 - y) = 8$$

$$2y + 8 - 2y = 8$$

$$8 = 8$$

\therefore no sol/infinit
this means the
equations are
parallel.

OK

the same!

52

check slopes and y-intercepts!

$$\begin{aligned} \textcircled{1} \quad x &= 4 - y \\ x - 4 &= -y \\ \boxed{y} &= -x + 4 \end{aligned}$$

$$\begin{aligned} \textcircled{2} \quad &\rightarrow \\ 2y + 2x &= 8 \\ 2y &= -2x + 8 \\ \boxed{y} &= -x + 4 \end{aligned}$$

Since the equations are the same there are infinite solutions.