

1.8 Solving a Linear System using Algebra - Substitution

p.92 #7a) Solve using Substitution.

$$\begin{array}{l} \textcircled{1} y = x - 1 \\ \textcircled{2} y = 2x - 3 \end{array} \left. \begin{array}{l} \\ \end{array} \right\} \begin{array}{l} \text{both equations} \\ \text{are isolated.} \end{array}$$

Given $\textcircled{S1}$ isolate 1 equation's variable as the subject.

The subject means that the LS = 1 variable with coefficient 1.

ex. $\textcircled{1} y = x - 1$
 \uparrow LS = 1y

$\textcircled{S2}$ Sub 1 eq. into the other.

Sub $\textcircled{1}$ into $\textcircled{2}$.

$$\begin{aligned} \textcircled{2} \left(\textcircled{1} \right) &= 2x - 3 \\ (x - 1) &= 2x - 3 \\ &\text{now collect like terms} \\ x - 1 &= 2x - 3 \\ x &= 2x - 3 + 1 \\ x &= 2x - 2 \end{aligned}$$

question 7 continued

$$\begin{aligned}x &= 2x - 2 \\ \leftarrow \\ x - 2x &= -2 \\ \cancel{x} &= \cancel{2} \\ \boxed{x=2}\end{aligned}$$

Step 3: sub $x=2$ into ① to solve for y .

$$\begin{aligned}x &= 2 \\ \textcircled{1} \quad y &= x - 1 \\ y &= 2 - 1 \\ \boxed{y=1}\end{aligned}$$

Step 4: Check $(2, 1)$ means to verify?

$\textcircled{1}$	$\textcircled{2}$		
<u>LS</u>	<u>RS</u>	<u>LS</u>	<u>RS</u>
$= y$	$= x - 1$	$= y$	$= 2(2) - 3$
$= 1$	$= 2 - 1$	$= 1$	$= 4 - 3$
	$= 1$		$= 1$

$\textcircled{SS} \therefore (2, 1)$ is the solution.