

# Thread 3, Quiz 1 – Solving Linear Systems

~~K 15~~ / C 5  
10

**Marks**

For all questions, use good form. Show your work: do not simply write a final answer.

1. Solve then linear system by graphing.

$x + y = 5$  (A)

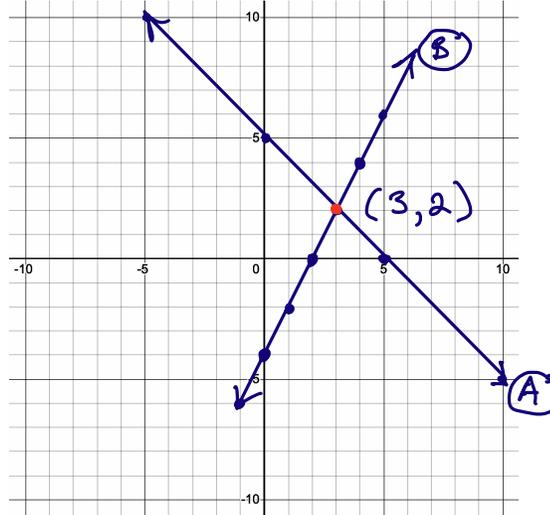
$2x - y = 4$  (B)

**K 3**

Solution appears to be:

(3, 2)

Fill in the blanks above.



2. Your friend thinks that (4, 1) is the solution to the following linear system:

$x - y = 3$  (A) \* y

$3x + y = 5$  (B)

Do a complete left-side / right-side check.

Then, state whether the solution is correct or not, and *why*.

Check in (A)

$x - y = 3$

check in (B)

$3x + y = 5$

**C 5**

LS =  $x - y$     RS = 3  
=  $4 - 1$   
= 3

LS =  $3x + y$     RS = 5  
=  $3(4) + 1$   
=  $12 + 1$   
= 13

LS = RS

LS  $\neq$  RS

$\therefore (4, 1)$  is a point on line (A)

$\therefore (4, 1)$  is not a point on line (B).

$\therefore$  the point is not on both lines it cannot be the single point the lines meet at.

**Marks**

3. Solve the following linear system by substitution.

$$\begin{aligned} -4x - 5y &= -17 & \textcircled{A} \\ 3x + y &= 10 & \textcircled{B} \end{aligned}$$

From  $\textcircled{B}$

$$\begin{aligned} 3x + y &= 10 \\ -3x & \quad -3x \end{aligned}$$

$$y = -3x + 10$$

Sub into  $\textcircled{A}$

$$\begin{aligned} -4x - 5y &= -17 \\ -4x - 5(-3x + 10) &= -17 \\ -4x + 15x - 50 &= -17 \end{aligned}$$

$$\begin{aligned} 11x - 50 &= -17 \\ +50 & \quad +50 \\ \hline 11x &= 33 \\ \hline 11 & \quad 11 \\ \hline x &= 3 \end{aligned}$$

Sub into  $\textcircled{B}$

$$\begin{aligned} 3x + y &= 10 \\ 3(3) + y &= 10 \\ 9 + y &= 10 \\ -9 & \quad -9 \\ \hline y &= 1 \end{aligned}$$

$\therefore$ , the solution appears to be  $(3, 1)$ .

K 3

4. Solve the following linear system by elimination.

$$\begin{aligned} 5x - 4y &= -2 & \textcircled{A} \\ 2x - 3y &= -5 & \textcircled{B} \end{aligned}$$

$$10x - 8y = -4 \quad \textcircled{A} \times 2$$

$$\ominus \quad 10x - 15y = -25 \quad \textcircled{B} \times 5$$

$$\begin{aligned} 7y &= 21 \\ \hline 7 & \quad 7 \\ \hline \end{aligned}$$

$$y = 3$$

Sub into  $\textcircled{A}$

$$\begin{aligned} 5x - 4y &= -2 \\ 5x - 4(3) &= -2 \\ 5x - 12 &= -2 \\ +12 & \quad +12 \\ \hline 5x &= 10 \\ \hline 5 & \quad 5 \\ \hline x &= 2 \end{aligned}$$

$\therefore$ , the solution appears to be  $(2, 3)$ .

K 4