Thread 1, Quiz 1 – Solving Linear Systems

/K 10 /C 5

Version A – Solutions

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

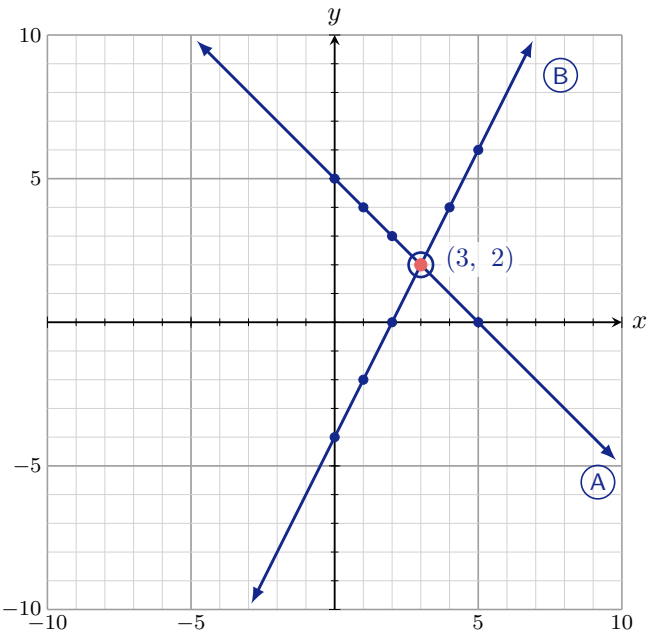
K 3 1. Solve the linear system by graphing.

$x + y = 5$ (A)
$2x - y = 4$ (B)

Solution appears to be:

(3 , 2)

Fill in the blanks above.



C 5 2. Your friend thinks that (4, 1) is the solution to the following linear system:

$x - y = 3$ (A)
$3x + y = 5$ (B)

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

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

Check in (A)

$x - y = 3$

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

LS = RS

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

Check in (B)

$3x + y = 5$

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

LS $\neq$ RS

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

Since (4, 1) is not on both lines, it cannot be the single point where the lines meet. So, the solution is **not correct**.

Marks

K 3 3. Solve the following linear system by substitution.

$$-4x - 5y = -17 \quad (A)$$
$$3x + y = 10 \quad (B)$$

From (B)

$$3x + y = 10$$
$$3x + y - 3x = 10 - 3x$$
$$y = \boxed{-3x + 10}$$

Sub into (A)

$$-4x - 5y = -17$$
$$-4x - 5(-3x + 10) = -17$$
$$-4x + 15x - 50 = -17$$
$$11x - 50 = -17$$
$$11x - 50 + 50 = -17 + 50$$
$$11x = 33$$
$$\frac{11x}{11} = \frac{33}{11}$$
$$x = \boxed{3}$$

Sub into (B)

$$3x + y = 10$$
$$3(3) + y = 10$$
$$9 + y = 10$$
$$9 + y - 9 = 10 - 9$$
$$y = 1$$

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

K 4 4. Solve the following linear system by elimination.

$$5x - 4y = -2 \quad (A)$$
$$2x - 3y = -5 \quad (B)$$

$$10x - 8y = -4 \quad (A) \times 2$$
$$\ominus\ 10x - 15y = -25 \quad (B) \times 5$$
$$7y = 21$$
$$\frac{7y}{7} = \frac{21}{7}$$
$$y = \boxed{3}$$

Sub into (A)

$$5x - 4y = -2$$
$$5x - 4(3) = -2$$
$$5x - 12 = -2$$
$$5x - 12 + 12 = -2 + 12$$
$$5x = 10$$
$$\frac{5x}{5} = \frac{10}{5}$$
$$x = 2$$

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