

## Unit 1: Linear Systems - Quiz #3

LS2	I am learning to solve systems of linear equations involving variables using an algebraic method.	/12
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1. Solve the following linear system algebraically using the substitution method. Show all of your work. (6 marks)

$$\textcircled{1} \quad 2x - 5y = -27$$

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

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

$$\begin{aligned} x &= 3 - 3y \\ x &= 3 - 3(\frac{1}{3}) \\ x &= 3 - 9 \\ \boxed{x} &= \boxed{-6} \quad \checkmark \end{aligned}$$

$$\text{P.O.I. } (-6, 3) \quad \checkmark$$

sub  $\textcircled{3}$  in  $\textcircled{1} \quad \checkmark$

$$2x - 5y = -27$$

$$\checkmark \quad 2(3 - 3y) - 5y = -27$$

$$6 - 6y - 5y = -27$$

$$6 - 11y = -27$$

$$-11y = -33$$

$$\boxed{y} = \boxed{3} \quad \checkmark$$

2. Solve the following linear system algebraically using the elimination method. Show all of your work. (6 marks)

$$\textcircled{1} \quad 4x + 3y = 12 \quad \checkmark$$

$$\textcircled{2} \quad -2x + 5y = 7 \quad \checkmark$$

$$\textcircled{2} \times -2 \quad \textcircled{3} \quad 4x - 10y = -14 \quad \checkmark$$

$$\textcircled{1} \quad 4x + 3y = 12$$

$$\textcircled{3} \quad 4x - 10y = -14$$

$$\textcircled{1} - \textcircled{3} \quad \underline{13y = 26}$$

$$\frac{13y}{13} = \frac{26}{13}$$

$$y = 2 \quad \checkmark$$

$$\text{P.O.I. } (1.5, 2) \quad \checkmark$$

$$4x + 3y = 12$$

$$\text{sub. } y = 2$$

$$4x + 3(2) = 12$$

$$4x + 6 = 12$$

$$4x = 12 - 6$$

$$4x = 6 \quad \checkmark$$

$$x = \frac{6}{4} = \frac{3}{2} = 1.5 \quad \checkmark$$