

## **Substitution Method**

## Steps:

- i) Choose one equation and isolate one variable; this equation will be considered the first equation. (easiest one to get x= or y= from either eqn 1 or eqn 2)
- ii) Substitute the solution from step 1 into the second equation and solve for the variable in the equation.
- iii) Using the value found in step 2, substitute it into the first equation and solve for the second variable.
- iv) Substitute the values for both variables into both equations to show they are correct.

## Solve this system of equation by substitution.

$$y = 15+6x$$
  
-3x -2y=0

$$-3x - 2y = 0$$

$$-3x - 2(15 + 6x) = 0$$

$$-3x - 30 - 12x = 0$$

$$-3x - 12x = 0 + 30$$

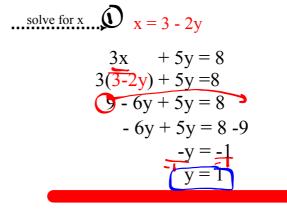
$$-15x = 30$$

$$x = -2$$

$$y = 15+6x$$
  
 $y = 15 + 6(-2)$   
 $y = 15 - 12$   
 $y = 3$   
 $(-2,3)$ 

Solve the system by Substitution Method

$$x + 2y = 3$$
$$3x + 5y = 8$$



$$x + 2y = 3$$
  
 $x + 2(1) = 3$   
 $x + 2 = 3$   
 $x = 3-2$   
 $x = 1$   
 $(1,1)$ 



Use Substitution to Find the Point of Intersection

$$x - 4y = 6$$

$$7x + 6y = 8$$

$$(1) \quad \exists x + 6y = 8$$

$$(2) \quad \exists x + 6y = 8$$

$$(3) \quad \exists x + 6y = 8$$

$$3 + y = 8 - 40$$

$$3 + y = 3 - 40$$

$$3 + y = 3 - 40$$

$$3 + y = -1$$

$$(11) \quad x - 4y = 6$$

$$x - 4(1) = 6$$

$$x = 6 - 4$$

$$x = 0$$

$$(14) \quad (2 - 1)$$

Use Substitution to Find the Point of Intersection

$$2x + y = 9 
3x - 5y = -19$$
(ii)  $3x - 5y = -19$ 

$$3x + 5(-3x + 1) = -19$$

$$3x + 10x - 45 = -19$$

$$13x = 26$$

$$13$$
(iii)  $3x + y = 9$ 

$$(x) + y = 9$$

$$y = 9 - 4$$

$$(x) (2,5)$$