SOLVE LINEAR SYSTEMS USING SUBSTITUTION

FIND THE POI USING ALGEBRA – THE SUBSTITUTION METHOD

Method

Step 1: Make sure both equations are in $y = mx + b$ form; if not, write them in this form.

Step 2: Looking at the first equation; write down what is on the right hand side of the equation and then write = sign.

Step 3: Looking at the second equation; write down what is on the right hand side of the equation.

Step 4: Solve for x.

Step 5: Choose either one of the original equations and write it down.

Step 6: Substitute the x value from Step 4 into the equation.

Step 7: Solve for y.

Step 8: Write a concluding statement "$\therefore$ the solution is (x, y)".

Example #1: Solve the following linear system.

$$y = 2x + 4$$
$$y = -x - 8$$

Solve for x:	Solve for y:	Solution:

Verify your solution by checking the point of intersection in each equation (LS=RS).

Example #2: Solve the following linear system.

$$x + y = 17$$
$$4x - 2y = -4$$

Solve for x:	Solve for y:	Solution:

Example #3

Kate is selling T-shirts to raise money for diabetes research. The supplier charges a $210 design fee plus $3 per T-shirt. Kate plans to sell the t-shirts for $10 each. How many T-shirts does Kate need to sell in order to break even?

Let ***C*** represent _____

Let ***n*** represent _____

Create two equations to model this problem.

Use **substitution** to determine the breakeven point (point of intersection).

Solve for x:	Solve for y:	Solution:

Verify your solution by **checking** the point of intersection in each equation (LS=RS).