

Wednesday, February 12, 2020



1.4 Solving Linear Systems: Substitution

Bell Work:

Solve each of the following for y , using the information provided. Leave your answers as exact values (fractions).

1) $3x - 5y = 6$, when $x = -2$

2) $-4y = 6x - 5$, when $x = 1$

3) $2x^2 - 3x + 5y = 7$, when $x = -1$

4) $x + y = 2$, when $x = y - 1$

When you get to #4, follow the same procedure that you were using in the previous questions!

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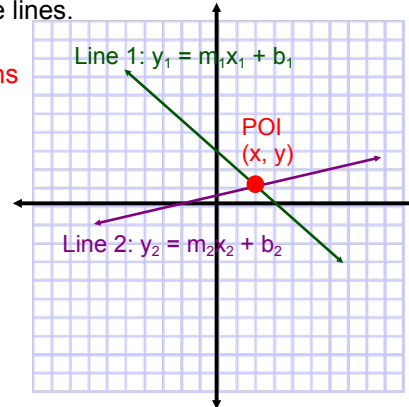
So far this week, you have solved linear systems by graphing. This works, but it does present some problems. List any issues that you encountered while you were solving by graphing, or any issues that you can see coming up if you continue to solve using only graphs.

Disadvantages to Solving by Graphing:



Fortunately, we can also solve linear systems of equations using algebra. Solving algebraically results in an exact answer every time. In order for us to solve algebraically, you need to remember:

- the solution of a linear system is just the POI of the lines.
- at the POI, the x and y - coordinates for both graphs are equal.
ie/ $x_1 = x_2$ and $y_1 = y_2$
- there is only one POI for a pair of lines, so these values MUST satisfy both equations.
- we can always check our answers by substituting the POI in to both of the original equations and making sure that the result is true!



Today we are going to solve using an algebraic technique called substitution.

substitution - a method of solving a linear system by rearranging one equation so that it can be substituted in to the other equation.

Steps to Solve w/ Substitution	Example
	Solve. $2x + 3y = 9$ ① $x - y = 2$ ②

Helpful Hints for Solving by Substitution:

- Always use brackets when you sub in your expressions and values. This will help you to avoid sign errors and algebraic mistakes.
- Do not skip steps unless you are sure that you know what you are doing. I realize it is a little bit long, but it's more frustrating if you have to do it three or four times to get the right answer.
- When you check, actually check to be sure that your statements are true. There is no excuse to ever get an answer wrong because you can verify them!
- Always choose the variable that is easiest to isolate. Do not create fractions if it is not necessary!
- Ask for help now if you don't get it. You will need to use this skill for the rest of your math courses!

Practice Problems:

Solve each of the following linear systems using substitution.

1) $y = 40x + 50$
 $y = 45x + 30$

2) $y = 5x - 2$
 $6x + 3y = 36$

3) $3y = 6x - 12$
 $-2x + y = -4$

4) $4x - 2y = 10$
 $3x + 2y = 4$

