Graphing Systems of Equations

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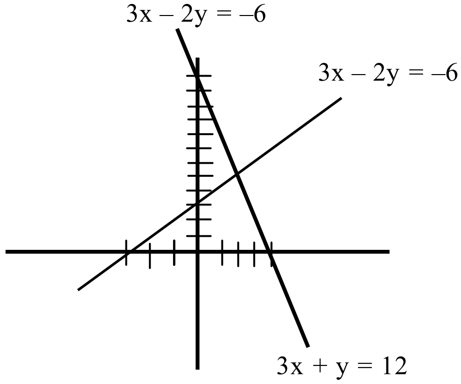
When we graph 2 equations on the same coordinate axes, the point of intersection is an ordered pair that satisfies both equations.

If the lines do not intersect, then they have no points (ordered pairs) in common. Mathematically, we say there is not a solution.

The reason we solve these equations by graphing is to see, if in fact, there will be a point of intersection. If there is, then by graphing them, we can see a point, described by an ordered pair that is approximately the answer.

For Example: $3x + y = 12$

$3x - 2y = -6$



Looking at those 2 graphs, it looks like they intersect at (2, 6).

To see if they did, we would plug in (2, 6) into both equations to see if they were true.

Doing that in the 1st equation.

I have

$3x + y = 12$

$3(2) + 6 = 12$ That checks.

Doing the same for the other equation.

$3x - 2y = -6$

$3(2) - 2(6) = -6$

That also checks.

Therefore the point (2, 6) is on both lines. It satisfies both equations. It is a solution.

If you are real neat with your graphing, you can find ordered pairs that approximate your answer.

But sometimes, the answers are ordered pairs that are made up of fractions. So later on, we'll give you more precise methods of finding points of intersection.

But, knowing how to graph these is important so you have an idea of whether or not there is a point of intersection, an ordered that satisfies both equations.

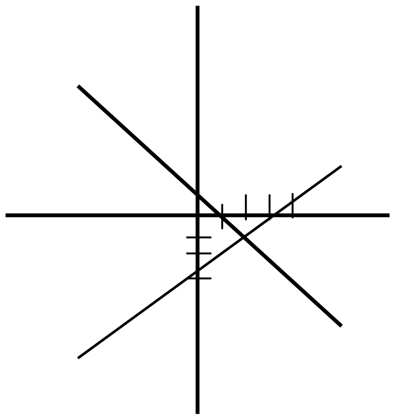
Let's try another, you say.

Ok.

$$y = -\frac{2}{3}x + 1$$

$$3x - 4y = 12$$

Graphing



The point of intersection appears to be around (3, –1).

If we plugged that ordered pair into both of those equations, we'd find it does not work. It does not satisfy both equations.

But, we know there is a point, an ordered pair, that satisfies both equations. And we know it's around (3, –1).

Next time, we'll give you a precise way of finding that point of intersection – Can't wait, can you?