Infinite Algebra 2

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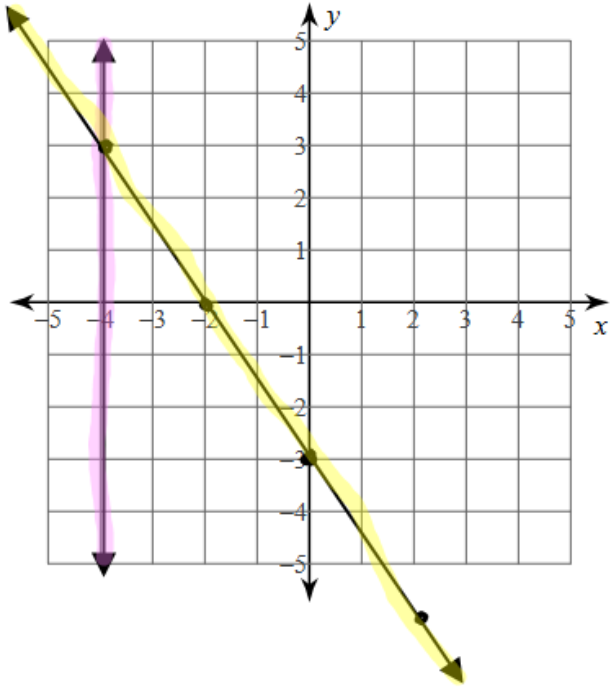
Solve each system by graphing.

Recall: $y=5$, for example, is a horizontal line

3) $x = -4$ → x = a # always vertical

$y = -\frac{3}{2}x - 3$ $m = \frac{-3\downarrow}{2\rightarrow}$ y-int: -3



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- There are 3 methods of solving systems of linear equations (in two variables):
  1. Graphing Method
  2. Substitution Method
  3. Elimination Method

Each method is useful depending on the problem. I almost always use the elimination method.

- Also, when solving systems you will always get one of these results:
  1. 1 solution - example $(-1, 5)$ (x, y)
  2. Infinitely many solutions
  3. No solution ($\emptyset$ empty set)

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Solve each system by substitution.

5) $10x + 2y = 18$
$y = -5x + 9$

- Since one of the equations is solved for a variable, I can "substitute" the expression into the other equation.

$10x + 2(-5x+9) = 18$

$10x - 10x + 18 = 18$

$18 = 18$
↓
TRUE

Inf. many solutions

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Solve each system by elimination.

Right away!

7) $-7x + 6y = 17$
$7x - 4y = -23$

$2y = -6$
$\frac{}{2} \quad \frac{}{2}$

$y = -3$

$-7x + 6y = 17$

$-7x + 6(-3) = 17$

$-7x - 18 = 17$
$+18 \quad +18$

$-7x = 35$
$\frac{}{-7} \quad \frac{}{-7}$

$x = -5$

- For the elimination method, the goal is to choose the easiest variable to eliminate (zero out). If you can't do it right away, you must multiply one or both equations by a # that will do the trick. The next 3 examples will demonstrate this concept.

$(-5, -3)$ 

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Solve each system by elimination.

9) $-5x + 4y = 6$
$10x - 8y = -30$

Here, must multiply 1st entire eq. by 2 to eliminate x or y.

$2(-5x + 4y = 6)$

$10x - 8y = -30$

→

$-10x + 8y = 12$
$10x - 8y = -30$

$0 = -18$

FALSE

No solution, $\emptyset$

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Solve each system by elimination.

11) $2x - 5y = 30$
$-7x + 6y = 10$

Here, mult. both eq's. I chose to eliminate the "y" variable.

$6(2x - 5y = 30)$
$5(-7x + 6y = 10)$ →

$12x - 30y = 180$
$-35x + 30y = 50$

$-23x = 230$
$\frac{-23}{-23} \quad \frac{}{-23}$

$x = -10$

Can you find y?