Name: _____

Solving Linear Systems: No Solution and Infinitely Many Solutions

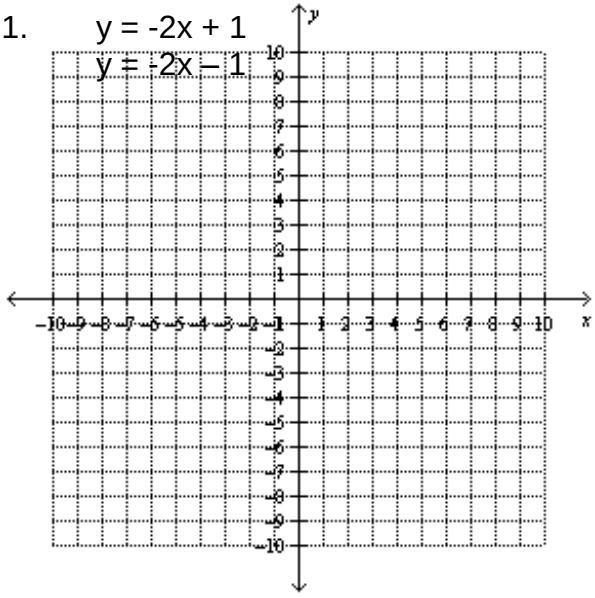
Recall that when two lines are parallel, they will never intersect. In this case, we say that the system has **no solution**.

A system of linear equations has **infinitely many solutions** when the graphs of the equations are the same line. Every point on the lines represents a point of intersection. Because there are an infinite number of points on a line, there are infinitely many solutions.

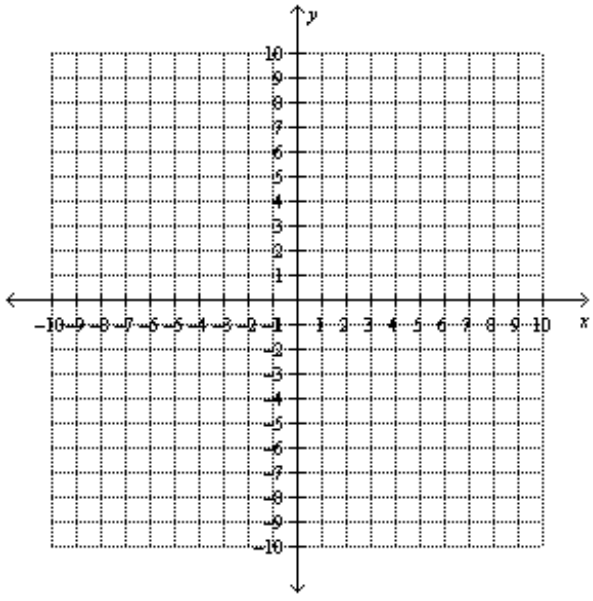
	Example Graph	Example Equations	Equation Characteristics
One Solution			
No Solutions			
Infinitely Many Solutions			

Solve each of the following systems and distinguish whether there is one solution, no solution, or infinitely many solutions. Show your work!

1. $y = -2x + 1$
   $y = -2x - 1$



2. $x + 2y = 10$
   $2x + 2y = 8$

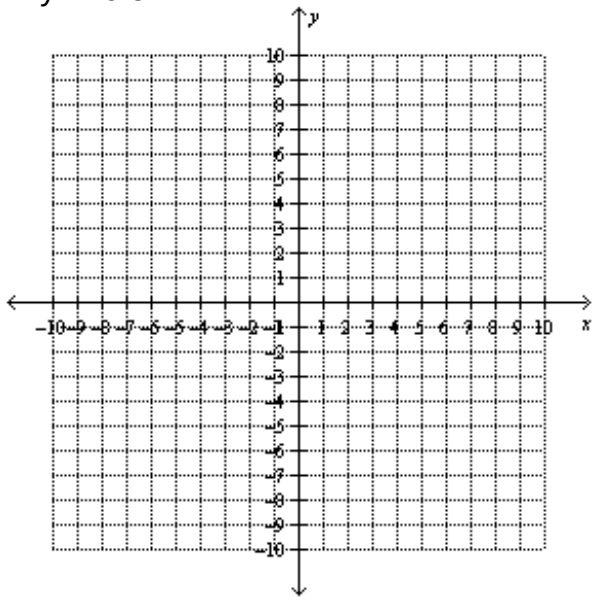


3. How can you tell if a system has no solution WITHOUT GRAPHING?

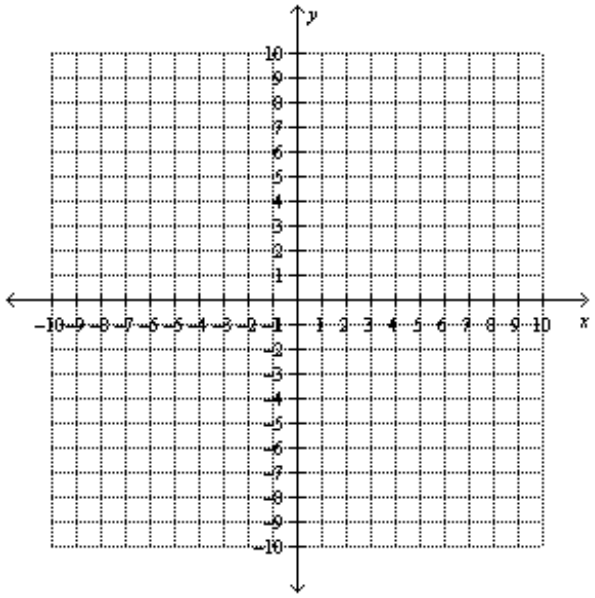
4. Create up your own linear systems problem where the answer would be “no solution”.

Solve each system of linear equations. (Note: Some may have no solutions or infinitely many solutions.)

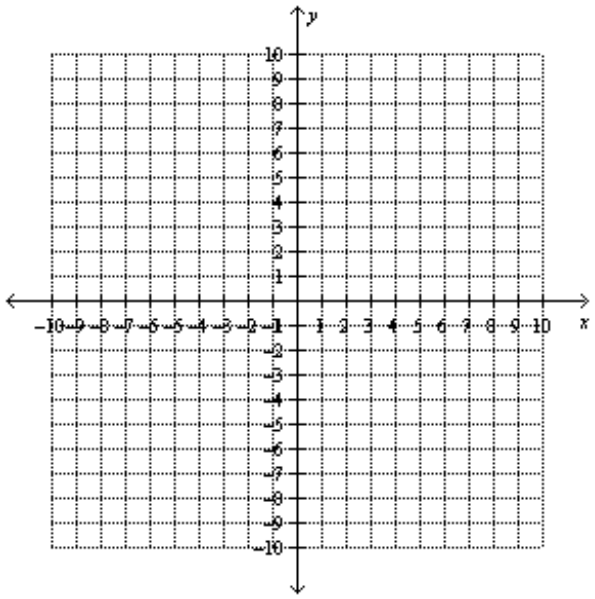
5. $2x + 4y = 8$
$y = -0.5x + 2$



6. $y = 3x + 4$
$-12x + 4y = 16$



7. $y = 2x + 6$
$4x – 2y = 8$



8. $y = 3x - 1$
$y = -2x + 4$