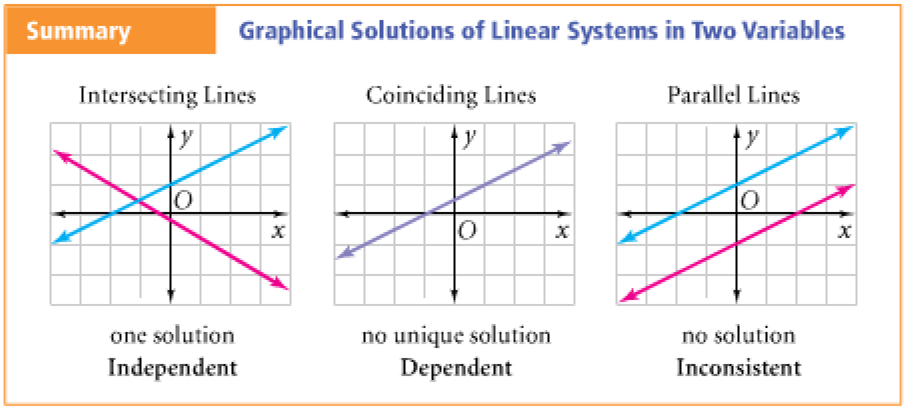
Algebra 2
Lesson 3.1 – Graphing Systems of Equations
Mrs. Snow, Instructor

Two or more linear equations form a **system of equations**. We can classify systems of equations by the number of solutions:



Independent: slopes: y-intercepts: one solution	Dependent: slopes: y-intercepts: infinite solutions	Inconsistent: slopes: y-intercepts: no solutions

The solution to a system of equations is the common point of intersection. An easy way to find a solution to s system of equations is to graph both equations and locate the (x,y) coordinates where the two lines meet.

Example: Solve the system below by graphing.

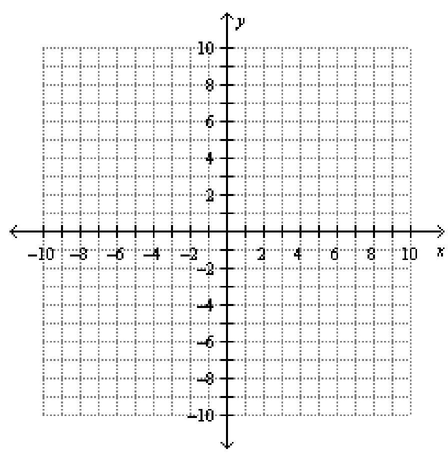
find the slope , y-intercept

$y = 2x - 3$

$y = x - 1$

Remember the starting point is the y-incpt. and follow the slope.

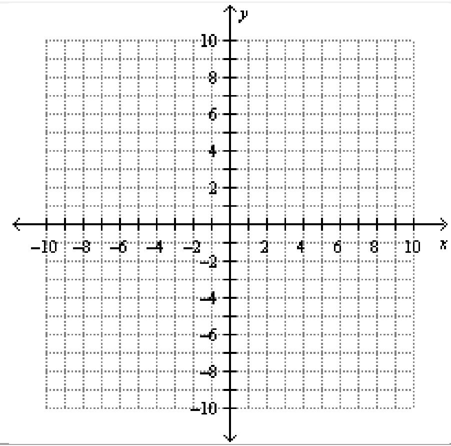
Notice that the lines intersect at (2,1)



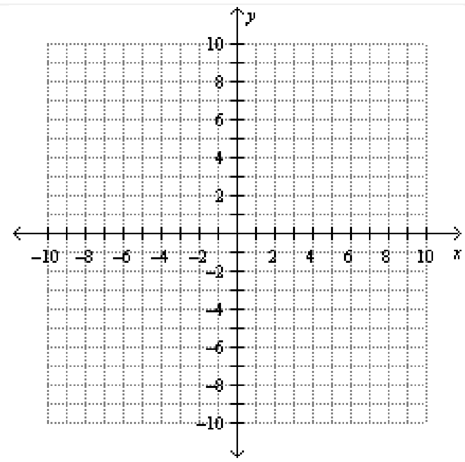
Solve by graphing. Determine if the system is independent, dependent, or inconsistent.

Example:

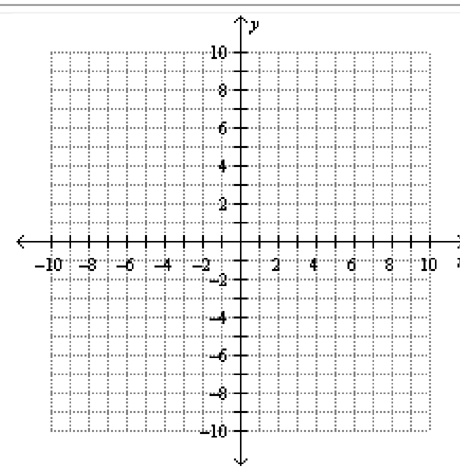
$$\begin{cases} 3x + y = 5 \\ 15x + 5y = 2 \end{cases}$$



$$\begin{cases} y = 2x + 3 \\ -4x + 2y = 6 \end{cases}$$



$$\begin{cases} x + 3y = 2 \\ 3x + 3y = -6 \end{cases}$$



On occasion, a system of equations will graph the same line with two different equations. This would mean that the graph of one line is directly on top of the second graph and the two lines would intersect in an infinite number of places. That is they are graphically, the same line. We call this **dependent** (one line) and it has **infinite solutions**.

Example: solve the system of equations

$$\begin{cases} 3x + y = 2 \\ 2y = -6x + 4 \end{cases}$$