

Solving a System of Linear Equations by Graphing

Name _____

Date _____ Period _____

System of Equations

A **system** of equations is a group of equations with the **same variables**.

$$3 + 2 = 5$$

$$3 - 5(2) = -7$$

✓

$$x + y = 5$$

$$x - 5y = -7$$

(3,2)

Is a **solution**

$$2x + y = 3$$

$$3x - 2y = 8$$

(2,-1)

Is a **solution**

$$2(2) + (-1) = 3$$

$$3(2) - 2(-1) = 8$$

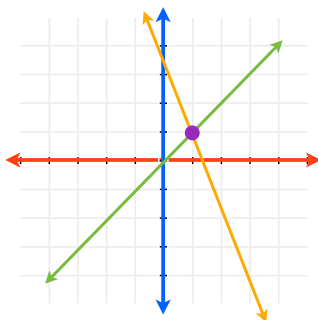
✓

The **solution** to a **system** of equations is the ordered pair (x,y) that satisfies **both equations**

System of Equations

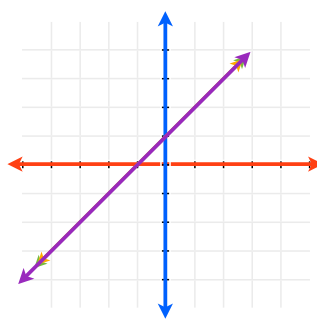
Three possible outcomes when solving a **system** by graphing

Different Lines

One **Solution** (x,y)

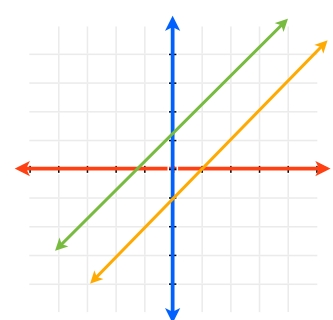
Consistent; Independent

Same Line

Infinitely Many **Solutions**

Consistent; Dependent

Parallel Lines

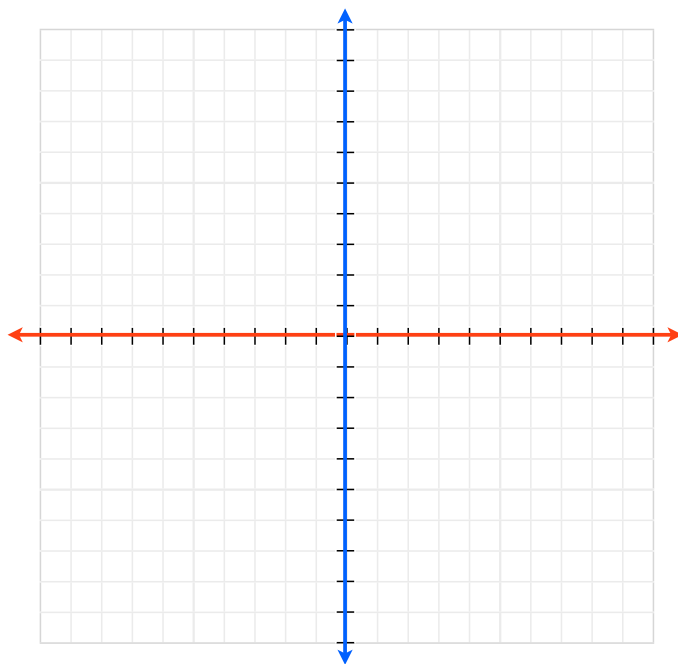
No **Solution**

Inconsistent

Solve the following system by graphing

$$y = -x + 5$$

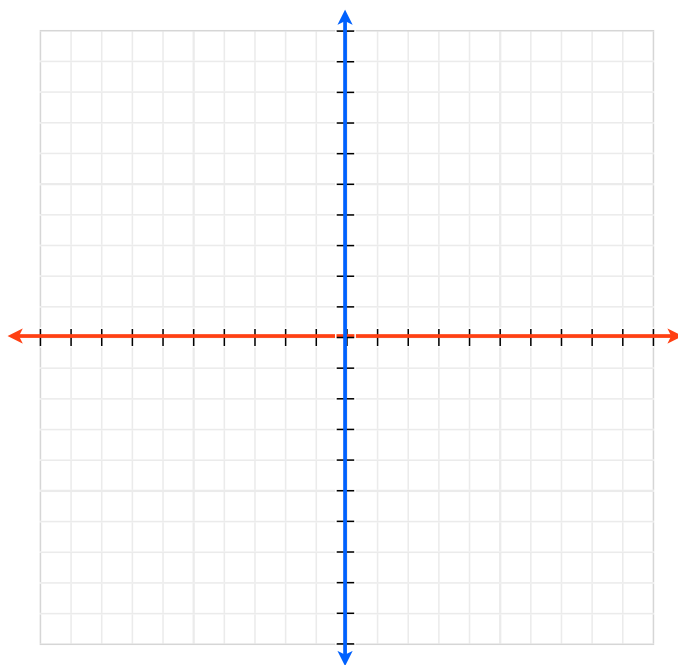
$$y = 2x - 1$$



Solve the following system by graphing

$$x + y = -2$$

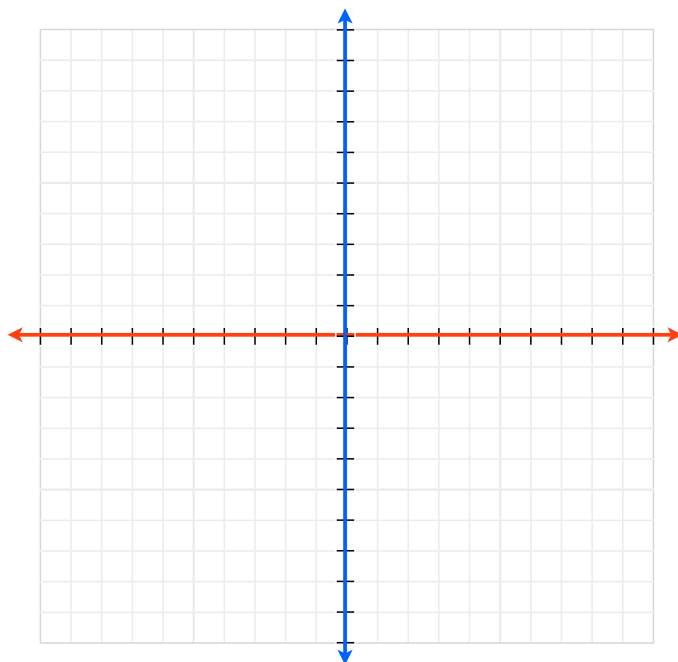
$$x = -2$$



Solve the following system by graphing

$$3x - y = -2$$

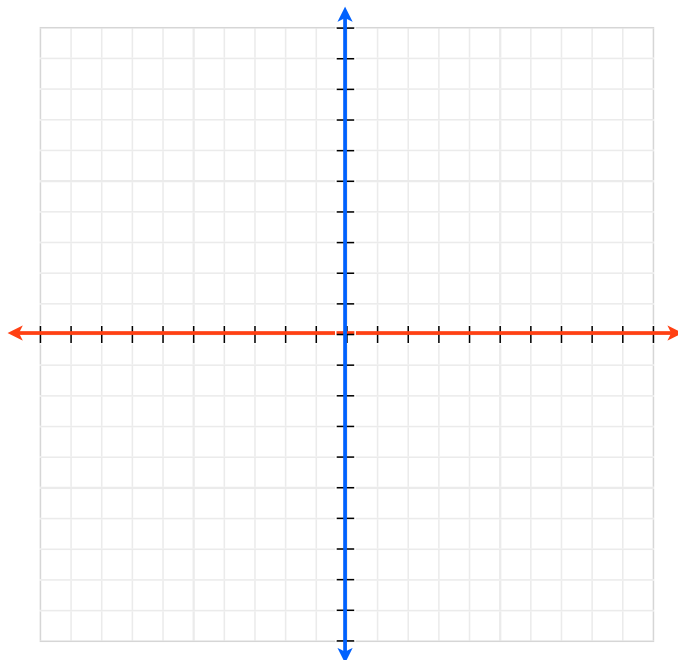
$$x - y = -4$$



Solve the following system by graphing

$$2x + y = 3$$

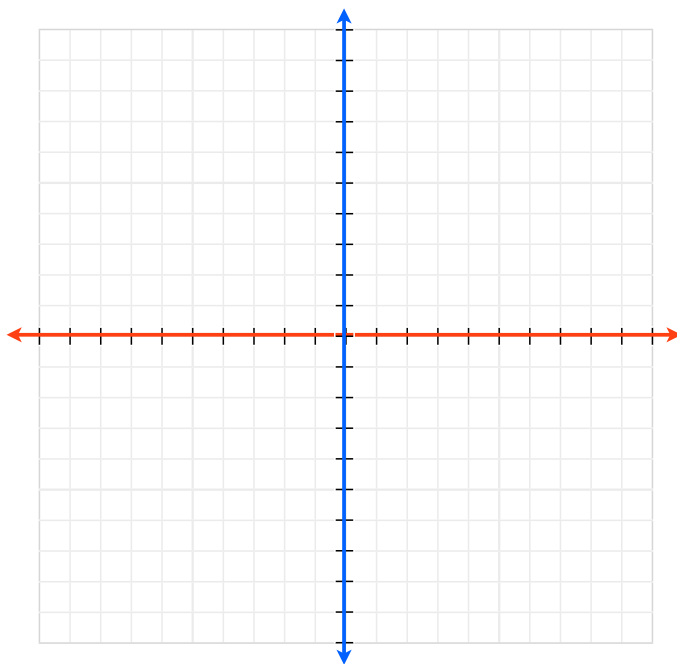
$$6x + 3y = 9$$



Solve the following system by graphing

$$y - 3 = 3x$$

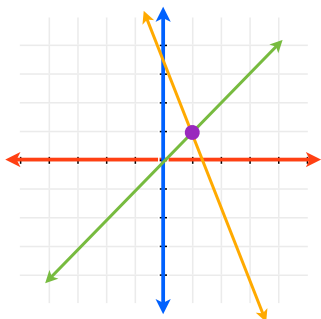
$$3x - y = 4$$



System of Equations

Three possible outcomes when solving a system by graphing

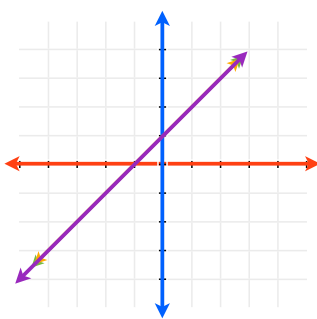
Different Lines



One Solution (x,y)

Consistent; Independent

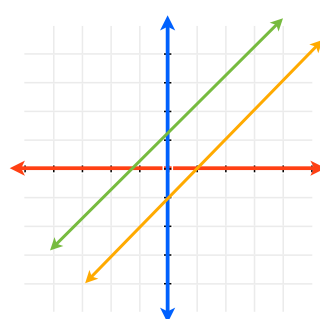
Same Line



Infinitely Many Solutions

Consistent; Dependent

Parallel Lines



No Solution

Inconsistent