# Cartesian Coordinate System

We use a rectangular coordinate system to help us "map" out relations. The coordinate grid has a horizontal axis and a vertical axis. Where these two axes intersect is called the origin. The grid is also divided into 4 quadrants. Traditionally, we use Roman numerals to label these 4 quadrants.

Let's begin by plotting some ordered pairs.

A=(1, 4)   B=(0,2)
C=(-3,5)   D=(-4,0)
E=(-2,-4)   F=(0,-3)
G=(3,-1)
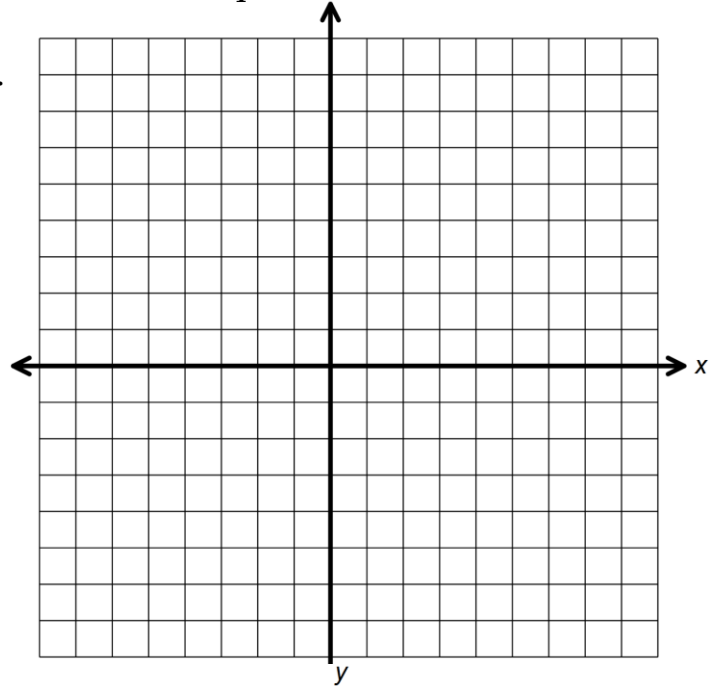
Find the ordered pair associated with the given points.
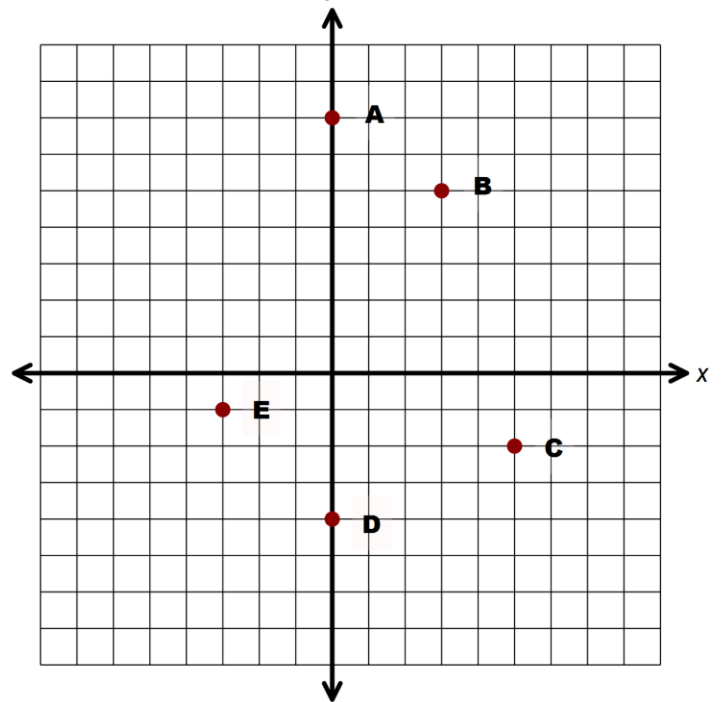
We also use the coordinate system to graph solutions of equations in two variables.

One of the most common equations we graph is linear equations. <u>LINES</u> There are several methods to graph lines: plot points by creating a table of values, plot the intercepts, use the slope and y-intercept.

How do you know if the graph of an equation is a line?

$y + 2x^2 = 5$ $\qquad\qquad\qquad\qquad$ $2y + 4x = 11$ $\qquad\qquad\qquad$ $y = \sqrt{2x+1}$
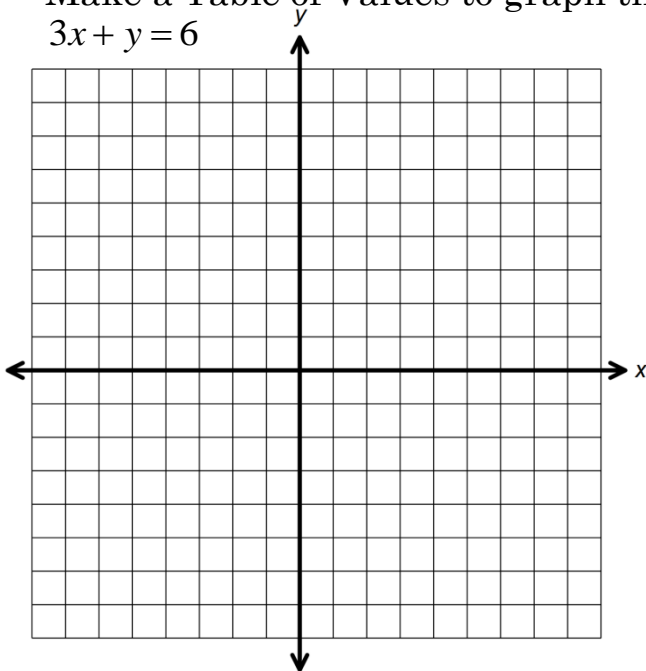
$x - 9 = 0$ $\qquad\qquad\qquad\qquad\qquad$ $y = 5$ $\qquad\qquad\qquad\qquad$ $y^2 + 2x^2 = 5$
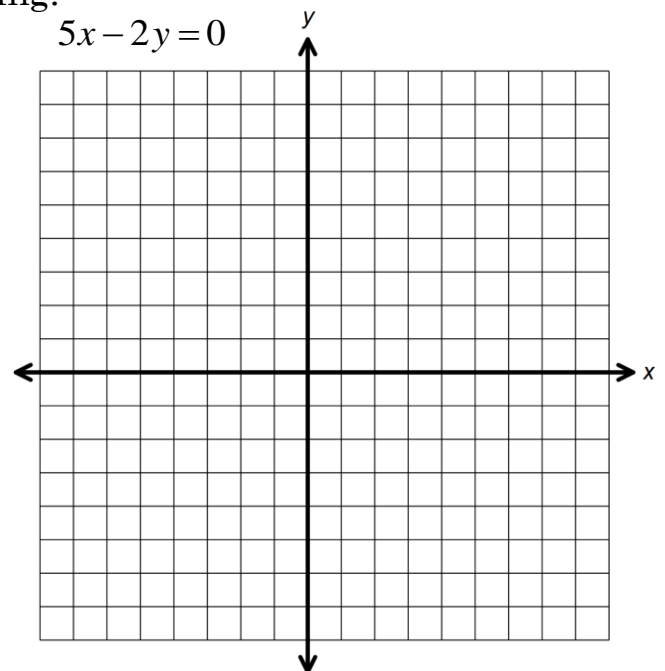
Make a Table of Values to graph the following:

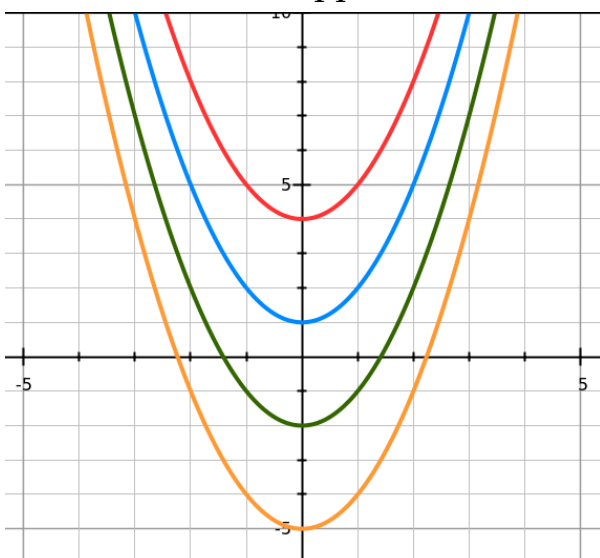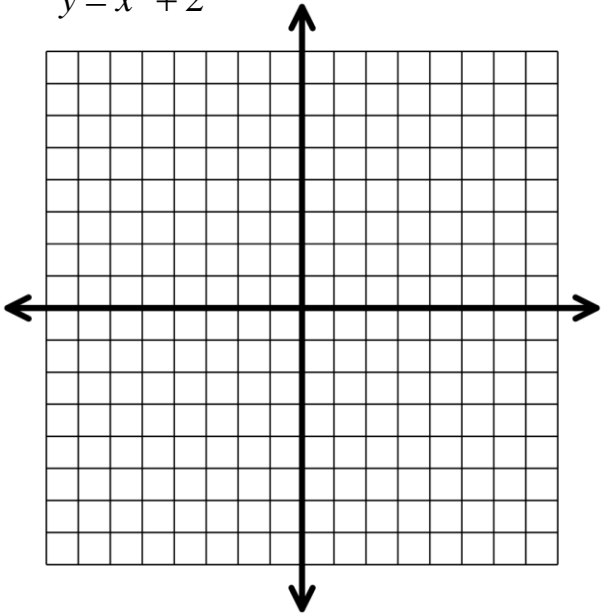$3x + y = 6$ $\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad$ $5x - 2y = 0$

What happens when we do NOT have a linear equation?
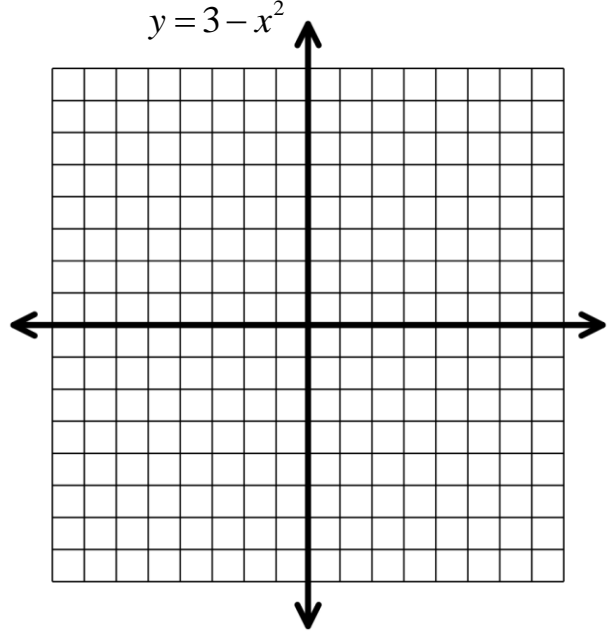$\qquad\qquad$ What happens when x is squared and y is not?
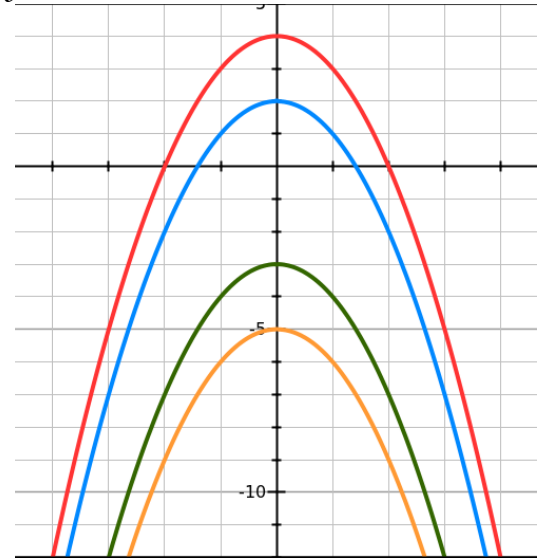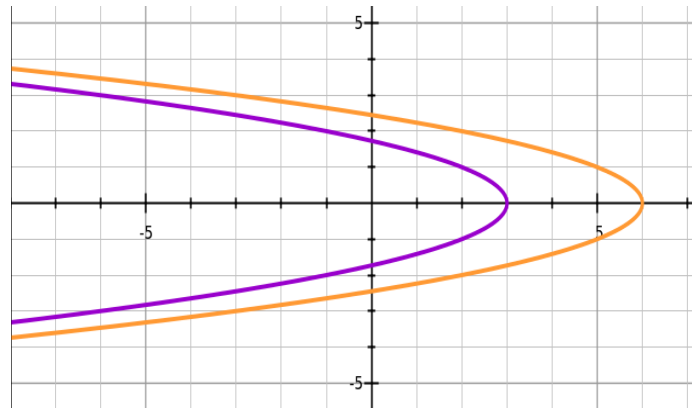
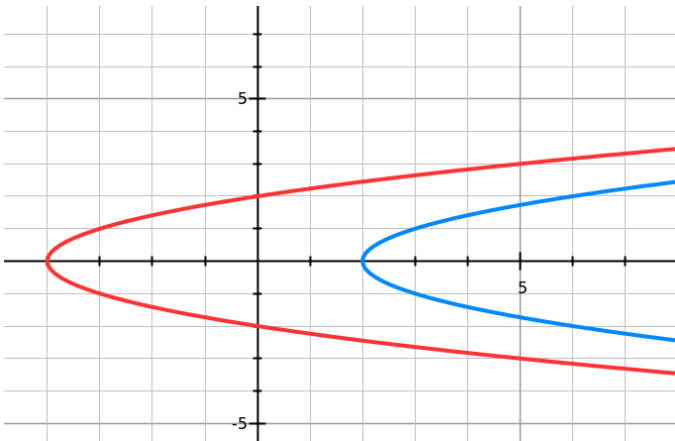Make a Table of Values to graph the following:

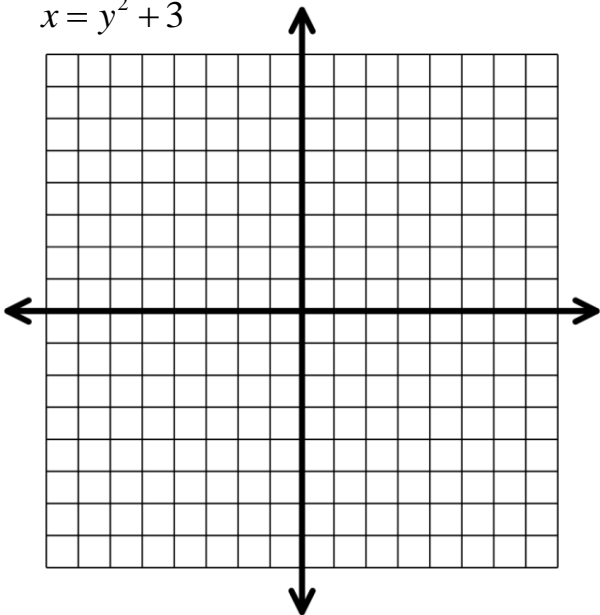$y = x^2 + 2$

$y = 3 - x^2$
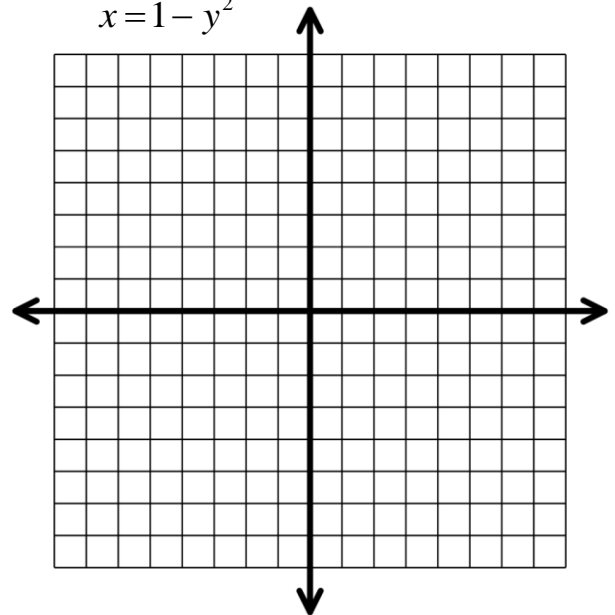
What happens when y is squared and x is not?
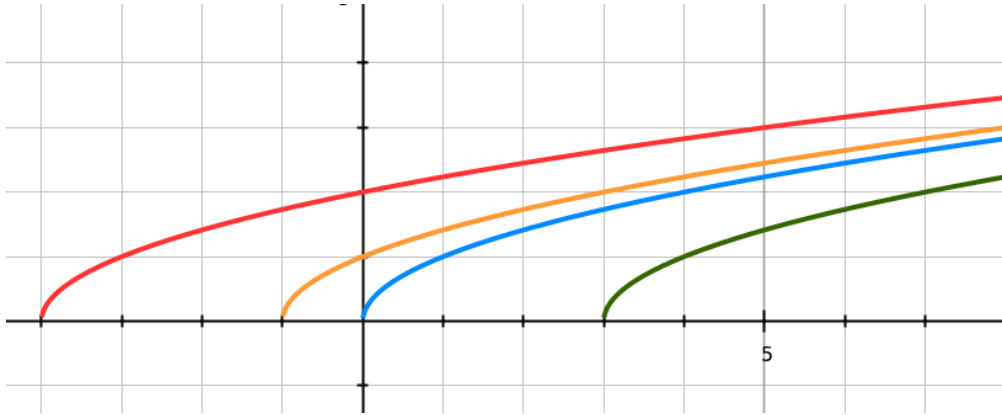
Make a Table of Values to graph the following:

$x = y^2 + 3$

$x = 1 - y^2$

What happens when x is under a square root sign?

Make a Table of Values to graph the following:

$y = \sqrt{x} + 3$ $y = \sqrt{x} - 2$