Systems of Inequalities

In section 7.5 you will learn to:
*   Sketch the graphs of inequalities in two variables.
*   Solve systems of linear inequalities in two variables.
*   Model and solve real-life problems with systems of inequalities in two variables.

<u>Systems of Inequalities</u>

Any curve cuts the plane into two parts. An inequality in 2 variables means we want to shade all points that are solutions of the inequality.

Example 1

Graph solutions to: $y \leq x^2 + 3$
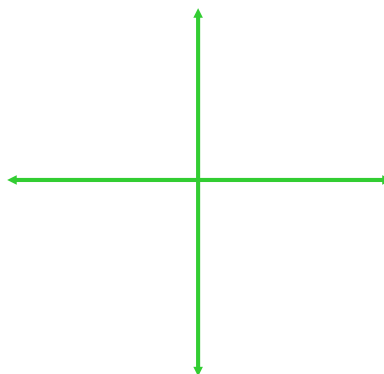
If you have two or more inequalities that you wish to solve simultaneously, you need to:

Of interest are the vertices (where two equations meet) and the common shaded region.
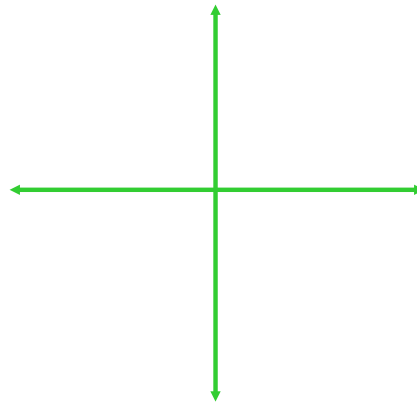
Example 2

    Solve and label vertices for:

        $4x - 6y > -12$

        $x - y > 1$

        $y > 0$

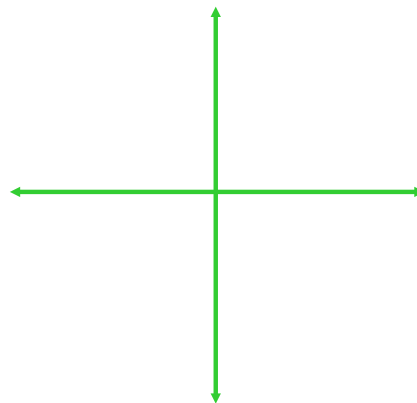
Example 3

 Solve and label vertices

$y \leq 2x - x^2$

$0 \leq x + y$

Example 4

For a concert event, there are $30 reserved seat tickets, and $20 general admission tickets.
There are 2000 reserved sets available and the fire regulations limit the number of paid
ticket holders to 3000. The promoter must take in $75,000 in ticket sales. Find and graph
the system of inequalities describing the different number of tickets that can be sold.