

Systems of Linear Inequalities

In This Unit:

1. Solving Systems of Inequalities

No Bellwork
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Lesson 7.1 Solving Systems of Inequalities

What You Need to Know:

A linear system has more than one inequality.

Example:

$$3x - 2y > 11$$

$$-x + 6y < 7$$

The solution of a system of inequalities is not a point...it's an entire shaded region!

Remember: When writing in slope-intercept form, if you multiply or divide by a negative you have to flip the symbol!

To Find a Solution Graphically:

1. Graph BOTH inequalities
2. Graph with solid or dotted lines
3. Shade for both inequalities

Above $\begin{matrix} > \\ \geq \end{matrix}$



Below $\begin{matrix} < \\ \leq \end{matrix}$



Solving Systems of Inequalities

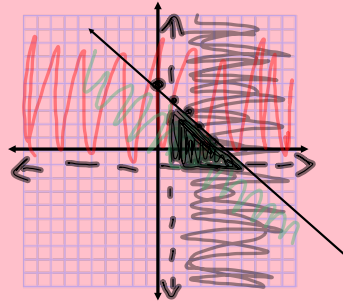
Graph the system of inequalities. Watch which lines to use and be sure to shade!

$$x+y \leq 5$$

$$x > 1$$

$$y > -1$$

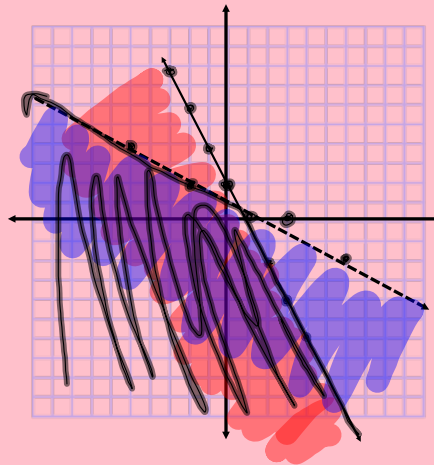
$$\begin{aligned}
 & x+y \leq 5 \\
 -x & \quad -x \\
 & y \leq -x+5 \\
 & m = -\frac{1}{1} \\
 & b = 5
 \end{aligned}$$



$$2x+y \leq 2$$

$$2x+3y < 6$$

$$\begin{aligned}
 & 2x+3y < 6 \\
 -2x & \quad -2x \\
 & 3y < -2x+6 \\
 & y < -\frac{2}{3}x+2 \\
 & m = -\frac{2}{3} \\
 & b = 2
 \end{aligned}$$



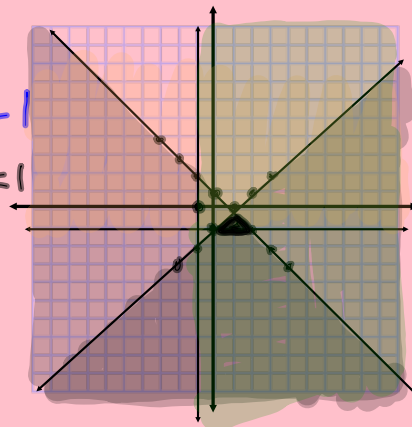
$$y \leq x-1$$

$$y \leq -x+1$$

$$y \geq -1$$

$$x \geq -1$$

$$\begin{aligned}
 & m = \frac{1}{1} \quad b = -1 \\
 & m = -\frac{1}{1} \quad b = 1
 \end{aligned}$$



Homework Assignment

Worksheet "Solving Systems of Inequalities"