Graphing to Solve *Systems* of Linear Inequalities

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System of Linear Inequalities – A set of *two or more* linear inequalities that are graphed on the same coordinate plane; the *intersection* of their *solution regions* represents the solution set for the *system*.

Example 1:

Graph the system $\{(x,y) \mid y > 2x+5, x \in R, y \in R\}$

$\{(x,y) \mid y \leq -x-5, x \in R, y \in R\}$

$m = \frac{2}{1} = \frac{-2}{-1}$

$m = \frac{-1}{1} = \frac{1}{-1}$

Test pt

$6 > 2(0)+5$?

$6 > 5$ ✓

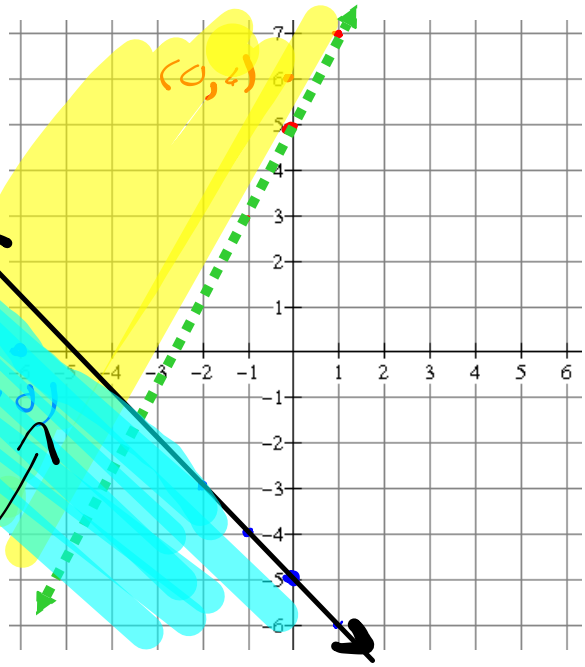
$0 \leq -(-6)-5$?

$0 \leq 1$ ✓

(0,4)

(-6,0)

Feasible region



Example 2:

Graph the system $\{(x,y)|x+3y\geq 0, x\in I, y\in I\}$
$\{(x,y)|x+y\geq 2, x\in I, y\in I\}$

$x+3y\geq 0$ $-x$ $-x$

$\frac{3y}{3}\geq\frac{-x}{3}+\frac{0}{3}$

$y\geq -\frac{1}{3}x+0$

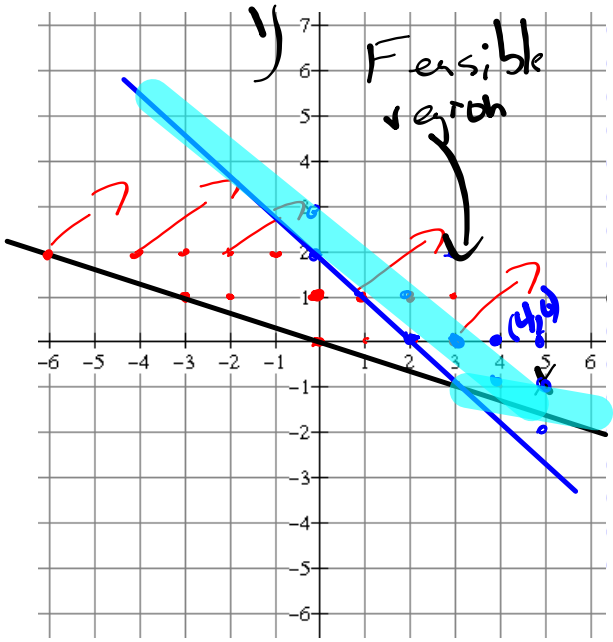
$m=-\frac{1}{3}$

$(0,1)$

$0+3(1)\geq 0$?

$4+0\geq ??$ ✓

L



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Pg 225: Questions #1 & 2

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R - Real
I - Integers
W - whole #'s