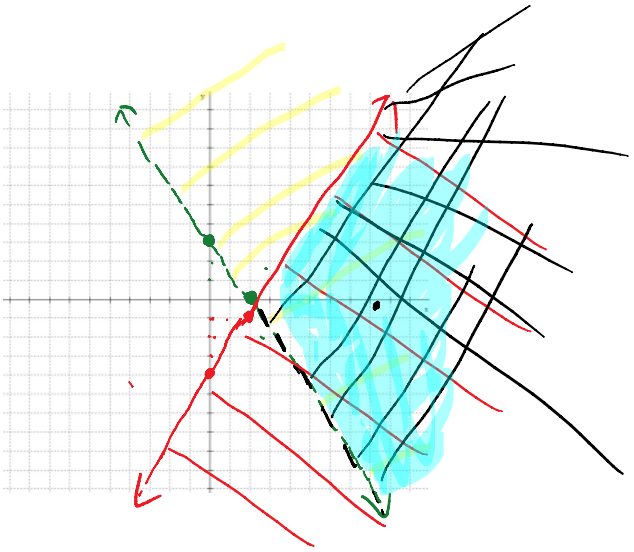
Section 9.5: Systems of Inequalities in Two Variables

Wednesday, December 03, 2014
5:13 PM

Goal: To graph the solution set of two-varibalbe systems of inequalities.

(ex) Graph the solution set to the system of inequalities

a) $\begin{cases} 3x+2y > 6 \\ y \leq \frac{3}{2}x - 4 \end{cases}$ dotted; solid



$3x+2y=6$

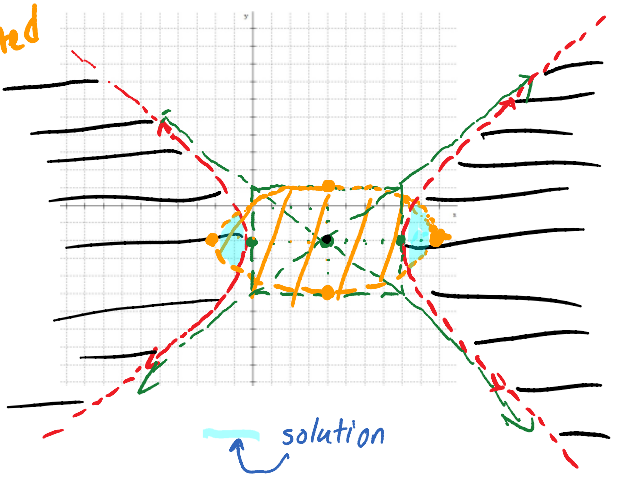
x	y
2	0
0	3

T.P. (0,0)

$0 > 6$ False

$y = \frac{3}{2}x - 4$

b) $\begin{cases} \frac{(x-4)^2}{16} - \frac{(y+2)^2}{9} > 1 \\ \frac{(x-4)^2}{36} + \frac{(y+2)^2}{9} < 1 \end{cases}$ dotted



hyperbola $\frac{(x-4)^2}{16} - \frac{(y+2)^2}{9} = 1$

hyp. C (4, -2)

T.P. (4, -2)

$0 > 1$ NO!

ellipse $\frac{(x-4)^2}{36} + \frac{(y+2)^2}{9} = 1$

C (4, -2)

T.P. (4, -2)

$0 < 1$ Yes!

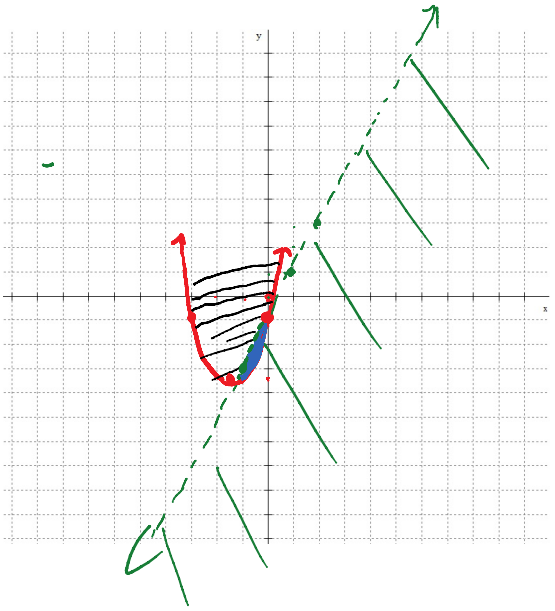
c) $\{ y \leq 2x - 1$

c) $\begin{cases} y < 2x - 1 \\ y \geq x^2 + 3x - 1 \end{cases}$

$y = 2x - 1$

$(0, -1)$

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



$y = \underset{0}{x}^2 + 3\underset{0}{x} - 1$

$(h, k) = \left(\frac{-b}{2a}, f\left(\frac{-b}{2a}\right)\right)$

$h = \frac{-3}{2}$

$k = \left(\frac{-3}{2}\right)^2 + 3\left(\frac{-3}{2}\right) - 1$

$= \frac{9}{4} - \underbrace{\frac{9}{2}}_{\frac{18}{4}} - \underbrace{1}_{\frac{4}{4}}$

$= -\frac{9}{4} - \frac{4}{4} = -\frac{13}{4}$

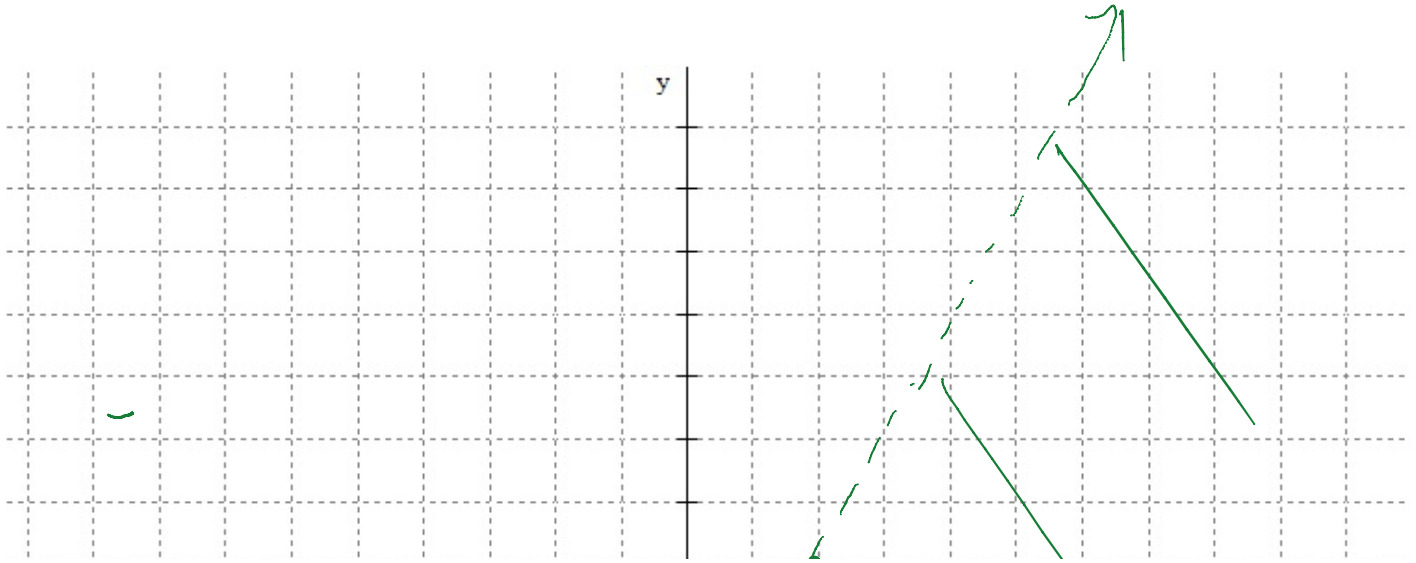
$V\left(\frac{-3}{2}, -\frac{13}{4}\right)$

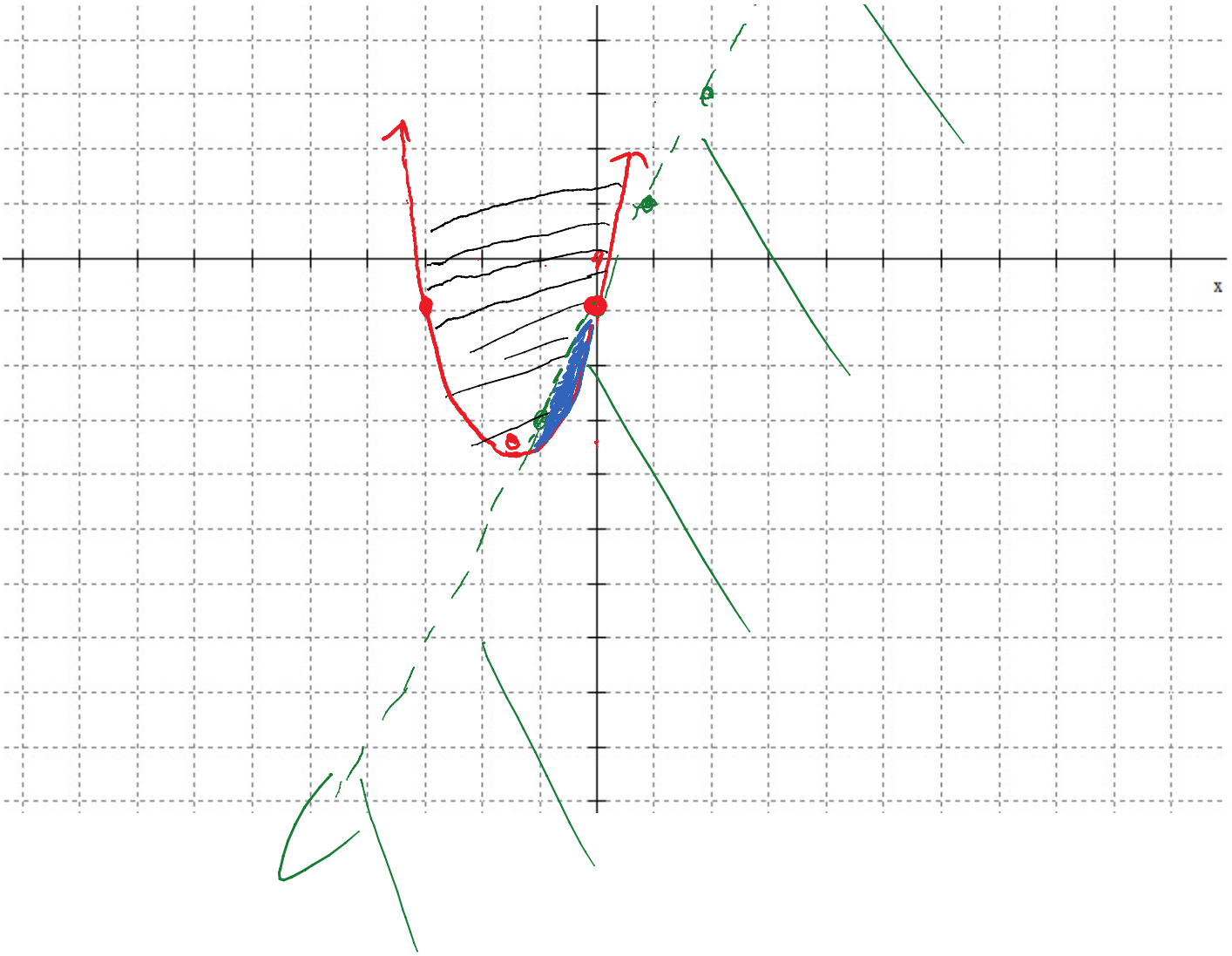
$(-1.5, -3.25)$

x	y
0	-1
-3	-1

T.P. $(0, 0)$

$0 \geq -1$ True!

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