

Chapter 9: Linear + Quadratic Inequalities

9.1: Linear Inequalities in Two Variable

Can be written in a number of ways:

$$Ax + By < C$$

$$Ax + By \leq C$$

$$Ax + By > C$$

$$Ax + By \geq C$$

where A, B + C are real numbers.

Solution region: all the points in the Cartesian Plane that satisfy an inequality (x, y plane)

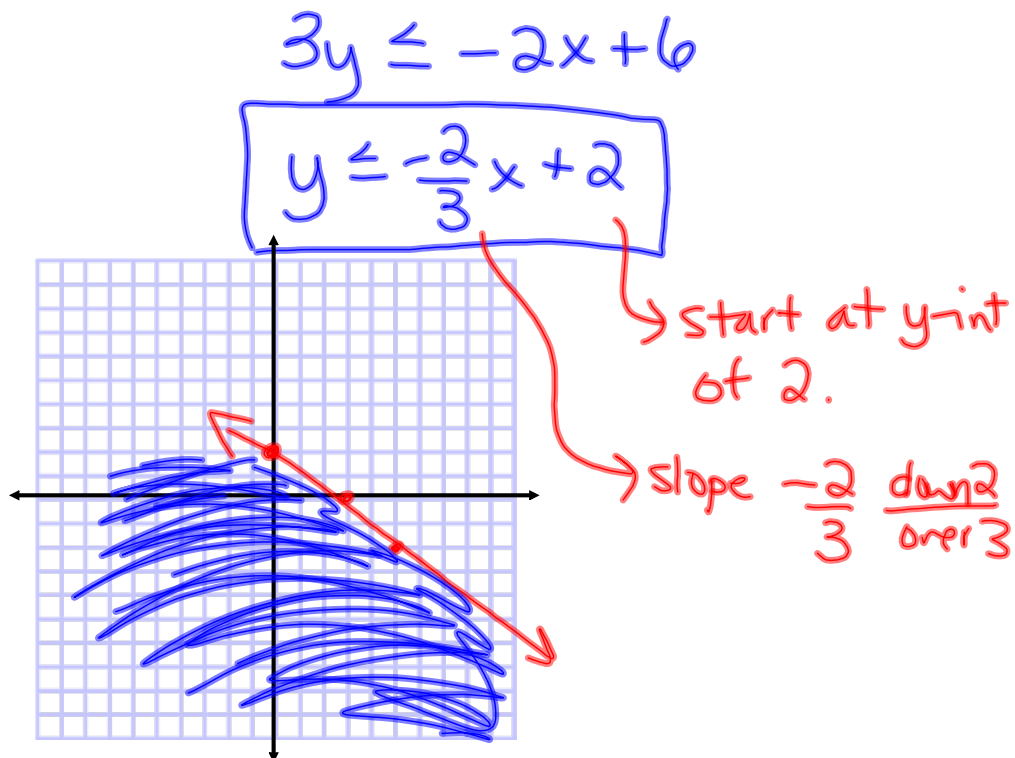
boundary: a line or curve that separates the plane into two regions, showing the solution region.

$\leq, \geq \Rightarrow$ boundary is solid

$<, > \Rightarrow$ boundary is dashed

ex.1) Graph $2x+3y \leq 6$

Graph the line ($y=mx+b$)



b) Is $(-2, 4)$ a part of the solution?

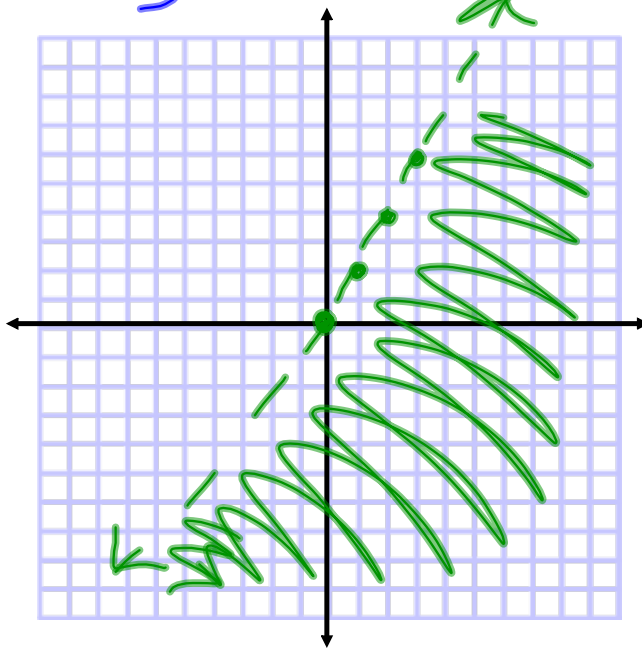
Check graph or plug into the inequality

$$\begin{aligned}
 2x+3y &\leq 6 \\
 2(-2)+3(4) &\leq 6 \\
 -4+12 &\leq 6 \\
 8 &\not\leq 6 \quad \text{not in region}
 \end{aligned}$$

$$2) 10x - 5y > 0$$

$$\frac{-5y}{-5} > \frac{-10x}{-5}$$

$$y < 2x$$



$$y = mx + b$$

$$y\text{-int} = 0$$

$$\text{Slope} = \frac{2}{1}$$

Worksheet

16a, b
17

$$x > 3$$

