$$9x - 7i > 3(3x - 7u)$$

$9x - 7i > 9x - 21u$

$-7i > 9x - 9x - 21u$

$-7i > -21u$

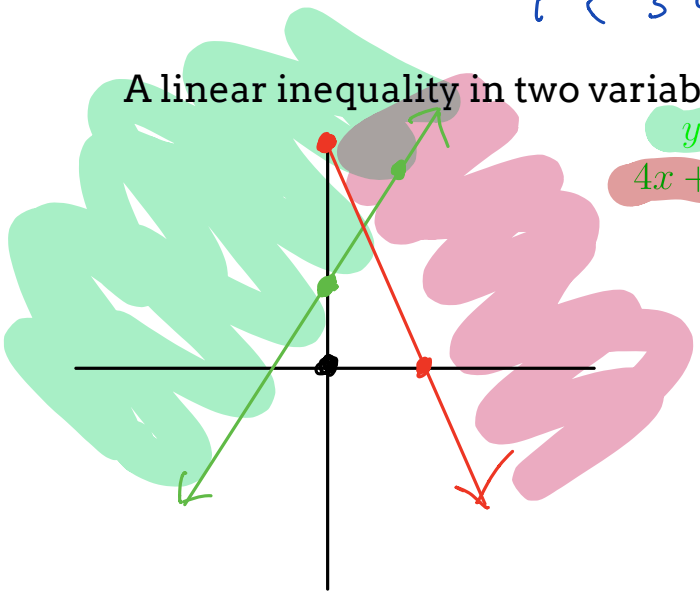
$i < \frac{-21u}{-7}$

$i < 3u$

A linear inequality in two variables may come in two forms:

$y \geq 3x + 2$

$4x + 2y \geq 10$



An inequality in 2 variables defines an infinite area in the cartesian plane.

Any point (x, y) that satisfies the inequality is a solution.

Eg: Which points are solutions?

$3x - 2y \geq -16$

$[(-3, 4), (0, 2), (-5, 3)]$

$3(-3) - 2(4) \geq -16$

$-9 - 8 \geq -16$

$-17 \geq -16$ ✗

$3(0) - 2(2) \geq -16$

$0 - 4 \geq -16$

$-4 \geq -16$

$3(-5) - 2(3) \geq -16$

$-15 - 6 \geq -16$

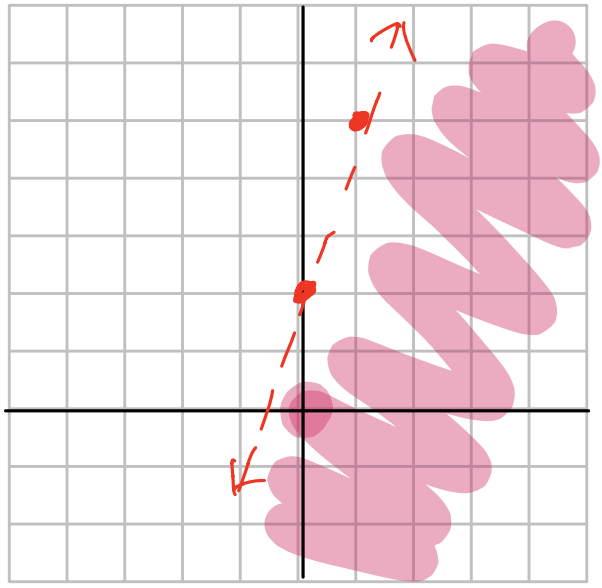
$-21 \geq -16$

$y < 3x + 2$

$(0, 0)$

$0 < 3(0) + 2$

$0 < 2$

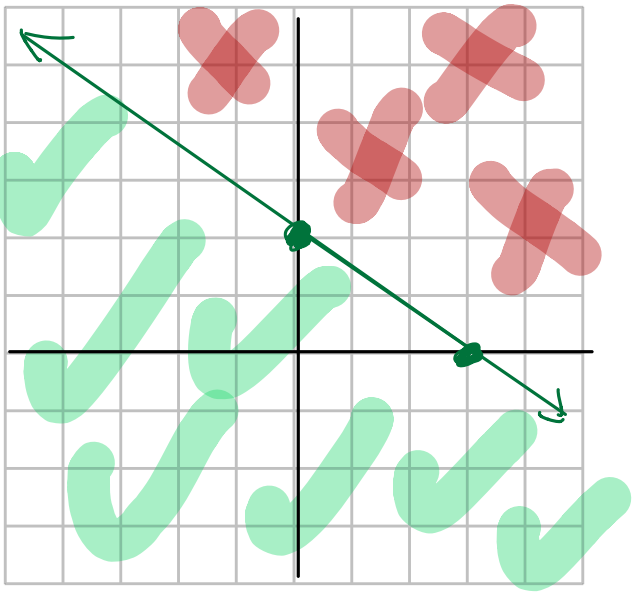


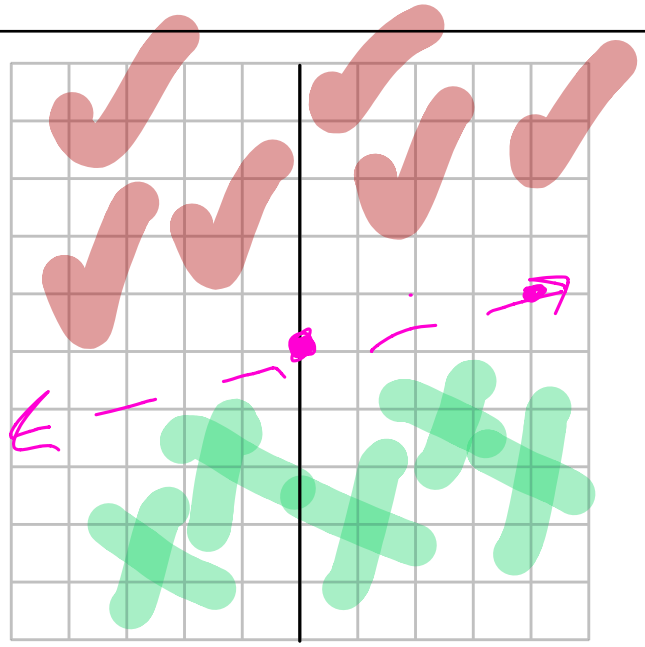
The line that separates valid solution points from invalid points is called the boundary line.

If the line itself is a solution, $(\geq, \leq)$ then the boundary line should be solid.

If the line itself is not a solution, $(>, <)$ then the boundary line should be dashed.

The algorithm:

EG:	$2x + 3y \leq 6$
Solve for y	$3y \leq -2x + 6$ $y \leq -\frac{2}{3}x + 2$
Decide if you need a solid or dotted line	Solid
Draw your line	
Decide which part of the graph contains valid solutions	
Scratch out the 'garbage'.	

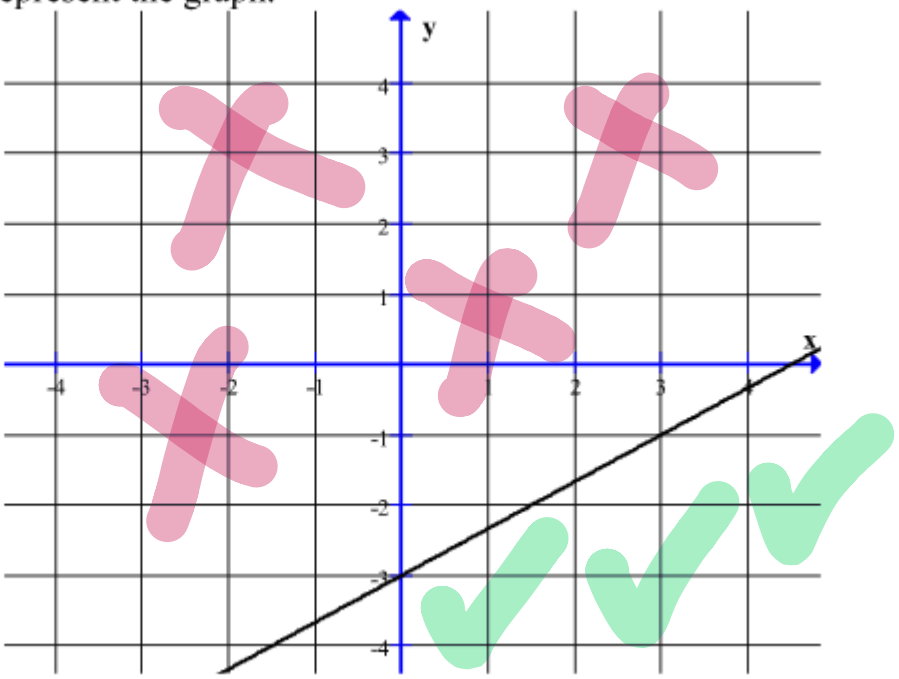
EG:	$5x - 20y < 0$
Solve for y	$-20y < -5x$ $y > \frac{x}{4}$
Decide if you need a solid or dotted line	dotted
Draw your line Decide which part of the graph contains valid solutions Scratch out the 'garbage'.	

Write an inequality to represent the graph.

$y = mx + b$

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

$y \leq \frac{2x}{3} - 3$



Write an inequality to represent the graph.

hint:
$y \leq -2x + 1$