11-8 Systems of Inequalities

dotted

≤ } solid ≥ } dotted

Warm Up

1. Graph $y < 3x - 2$.

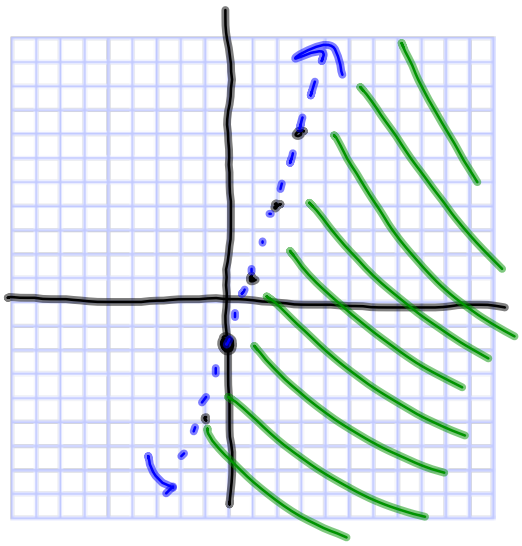
$m = \frac{3}{1}$

Test (0,0)

$0 < 3 \cdot 0 - 2$

$0 < -2$

False



2. Graph $y > 1$.

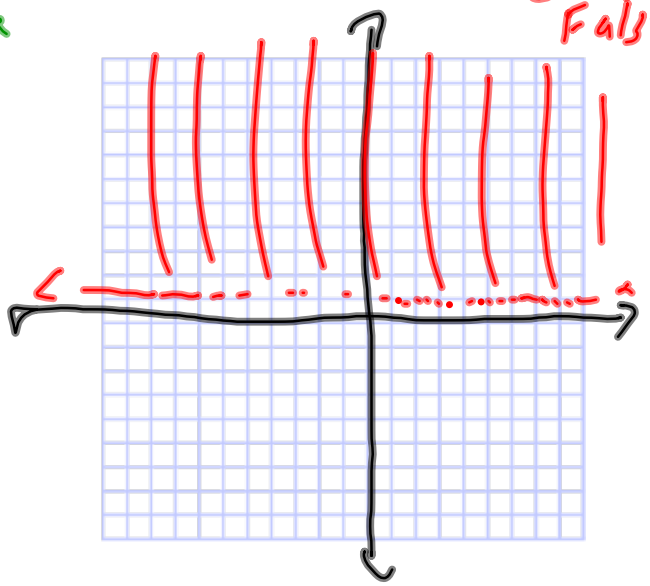
$y = 1$

(dotted

Test (0,0)

$0 > 1$

False



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11-8 Systems of Inequalities

Steps

1. Graph & shade the first inequality.
   - Graph the line by making a table or use the form y = mx+b where m stands for the slope and b stands for the y-intercept
   - Pick a point (x, y) **clearly** on one side of the line.
   - Test the point to see if it is a solution. Plug x and y into the inequality.
   - If it is true, then the point **IS** a solution so shade that side of the line.
   - If it is false, the point **IS NOT** a solution so shade the **OTHER** side of the line.
1. Graph & shade the second inequality.
2. Darken the overlapping area. (colored pencils help) All points in this area are solutions.

Remember...

< or > means use dotted line

or means use solid line

≤ ≥

Examples $y = mx + b$

Solve each system of inequalities by graphing.

$3x + y \leq 4 \rightarrow y \leq -3x + 4$

Test (0,0)

$0 \leq -3(0) + 4$

$0 \leq 4$ True

$m = \frac{-3}{1}$ ↓ →

$x - y > 1$

$\frac{-y}{-1} > \frac{-x}{-1} + \frac{1}{-1}$

$y < |x - 1$

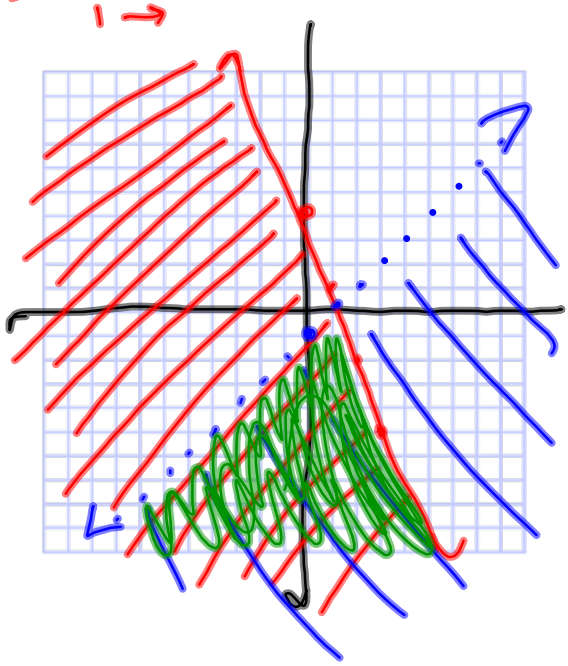
$m = \frac{1}{1}$ ↑ →

Test (0,0)

$0 < |0 - 1$

$0 < -1$

False



vertical

$x > 0$

horizontal

$y > 1$

$y < (-1/2)x + 4$

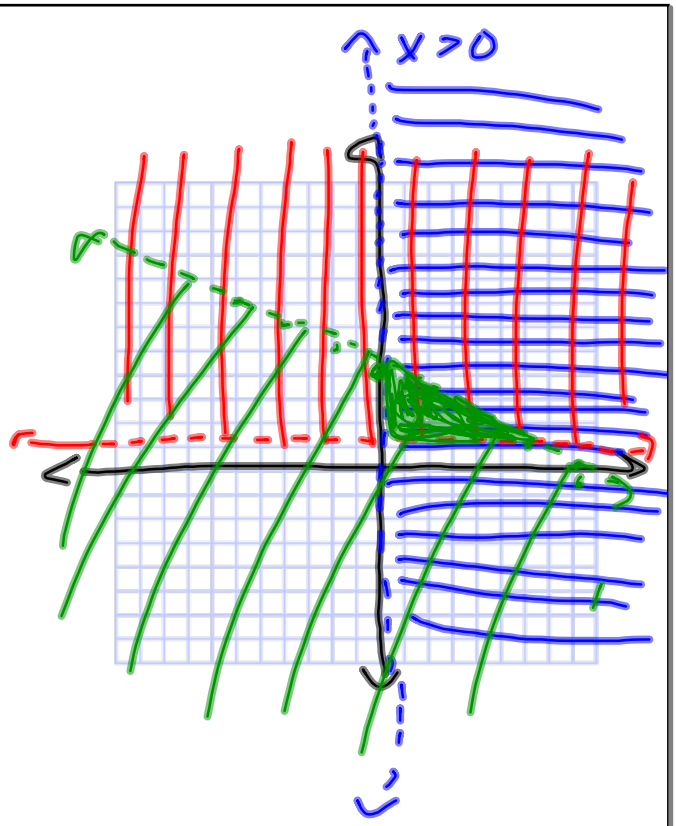
$m = \frac{-1}{2}$ ↓ 2 →

Test (0,0)

$0 < -\frac{1}{2} \cdot 0 + 4$

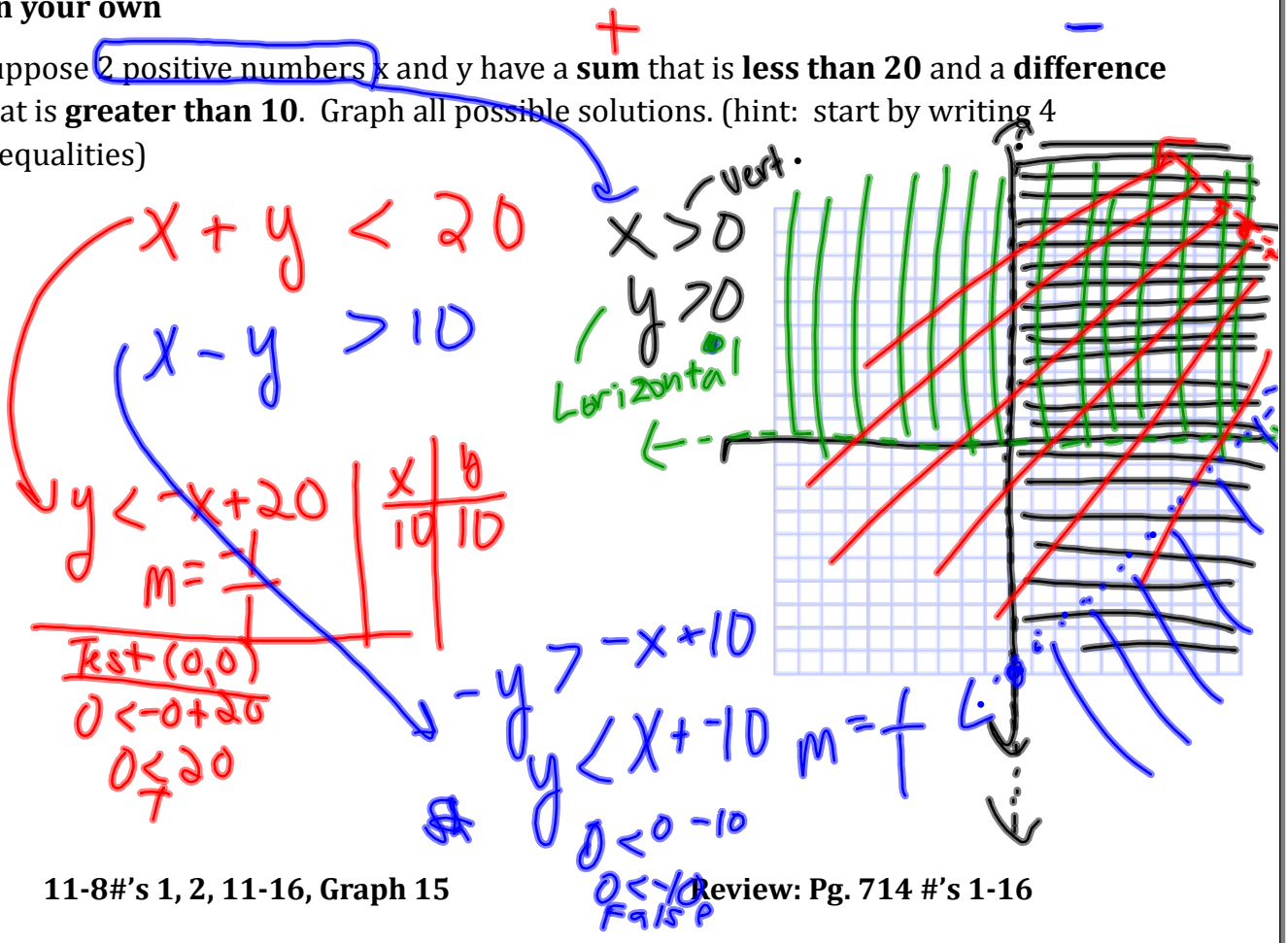
$0 < 4$

TRUE



On your own

Suppose 2 positive numbers x and y have a **sum** that is **less than 20** and a **difference** that is **greater than 10**. Graph all possible solutions. (hint: start by writing 4 inequalities)



11-8#'s 1, 2, 11-16, Graph 15 **Review: Pg. 714 #'s 1-16**