

If it's Monday it's MATH

Warm up

2/25

Solve this absolute value inequality

$$|2x - 4| \geq 1$$

$$\begin{array}{l} 2x - 4 > 1 \\ +4 \quad +4 \\ \hline 2x > 5 \\ \frac{2x}{2} > \frac{5}{2} \\ x > 2\frac{1}{2} \end{array} \quad \text{or} \quad \begin{array}{l} 2x - 4 < -1 \\ +4 \quad +4 \\ \hline 2x < 3 \\ \frac{2x}{2} < \frac{3}{2} \\ x < 1\frac{1}{2} \end{array}$$

A number line is drawn with open circles at $1\frac{1}{2}$ and $2\frac{1}{2}$. Arrows point outwards from these circles, indicating the solution set is $x < 1\frac{1}{2}$ or $x > 2\frac{1}{2}$.

5.7 Graph Linear Inequalities in Two Variables

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A **linear inequality in two variables**, such as $x - 3y < 6$, is the result of replacing the = sign in a linear equation with $<$, \leq , $>$, or \geq . A **solution of an inequality in two variables** x and y is an **ordered pair** (x, y) that produces a true statement when the values of x and y are substituted into the inequality.

KEY CONCEPT

For Your Notebook

Graphing a Linear Inequality in Two Variables

- STEP 1** Graph the boundary line. Use a dashed line for $<$ or $>$, and use a solid line for \leq or \geq .
- STEP 2** Test a point not on the boundary line by checking whether the ordered pair is a solution of the inequality.
- STEP 3** Shade the half-plane containing the point if the ordered pair is a solution of the inequality. Shade the other half-plane if the ordered pair is *not* a solution.

$$5x + 3y > 27$$

$$\begin{matrix} -5x & -5x \end{matrix}$$

$$\frac{3y}{3} > \frac{-5x + 27}{3}$$

$$y > -\frac{5}{3}x + 9$$

down 5
right 3

(0,9) y-intercept

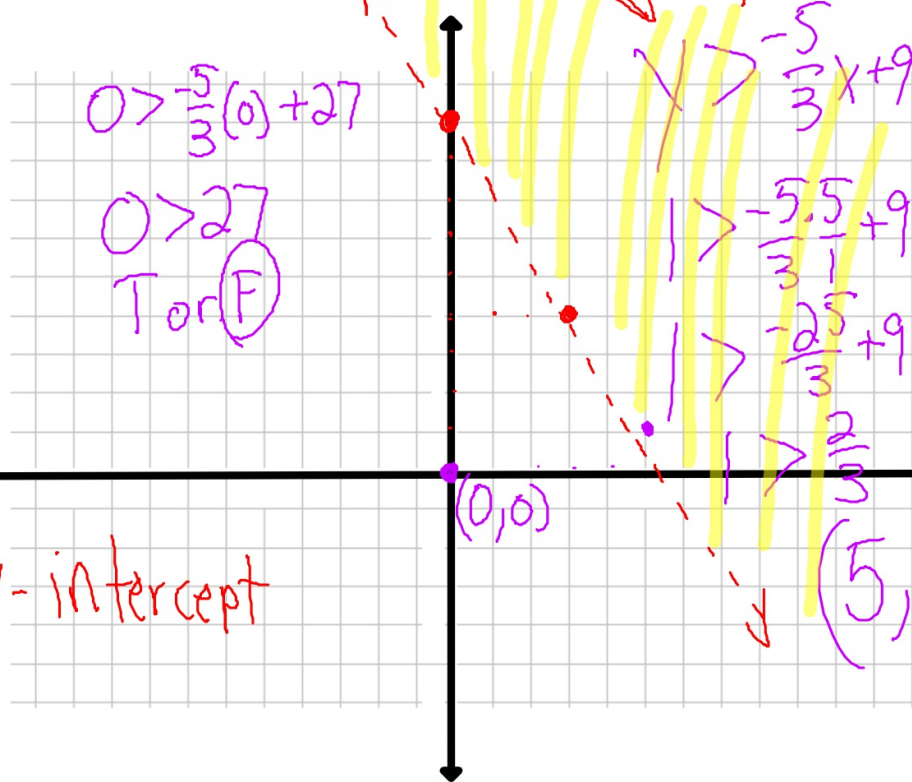
$$0 > -\frac{5}{3}(0) + 27$$

$$0 > 27$$

T or F

neg. slope

$$Y = mX + b$$



Point where the line crosses Y-axis
m = slope

> SHADE UP

≥ ABOVE LINE

< SHADE DOWN

≤ BELOW LINE

$$+3y - 15 \leq 6x$$

$$+15 \quad +15$$

$$\frac{+3y}{+3} \leq \frac{6x+15}{+3}$$

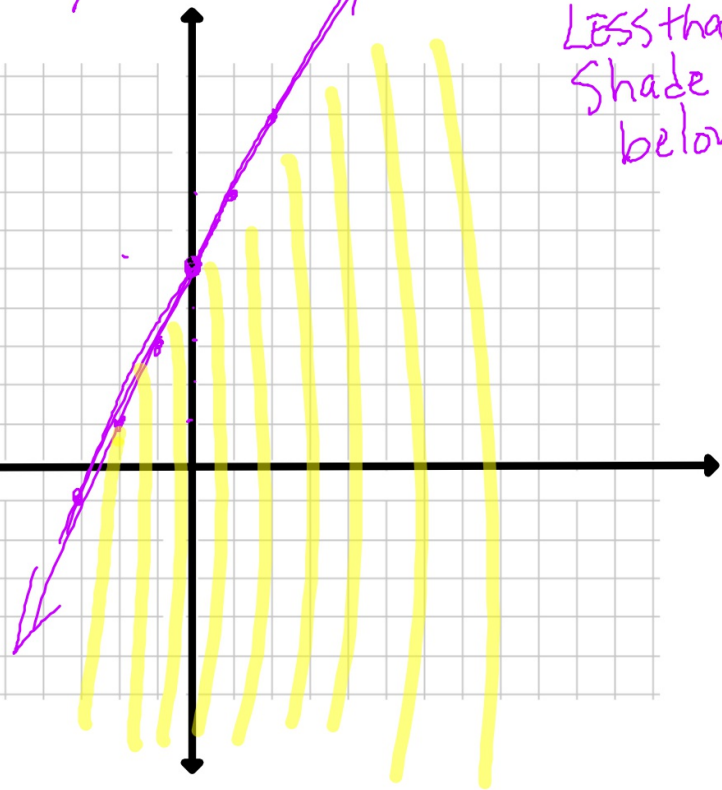
$$y \leq 2x + 5$$

Slope = 2 = $\frac{2 \text{ up}}{1 \text{ right}}$
 y-int = (0, 5)

$$y \leq mx + b$$

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

Less than
Shade
below



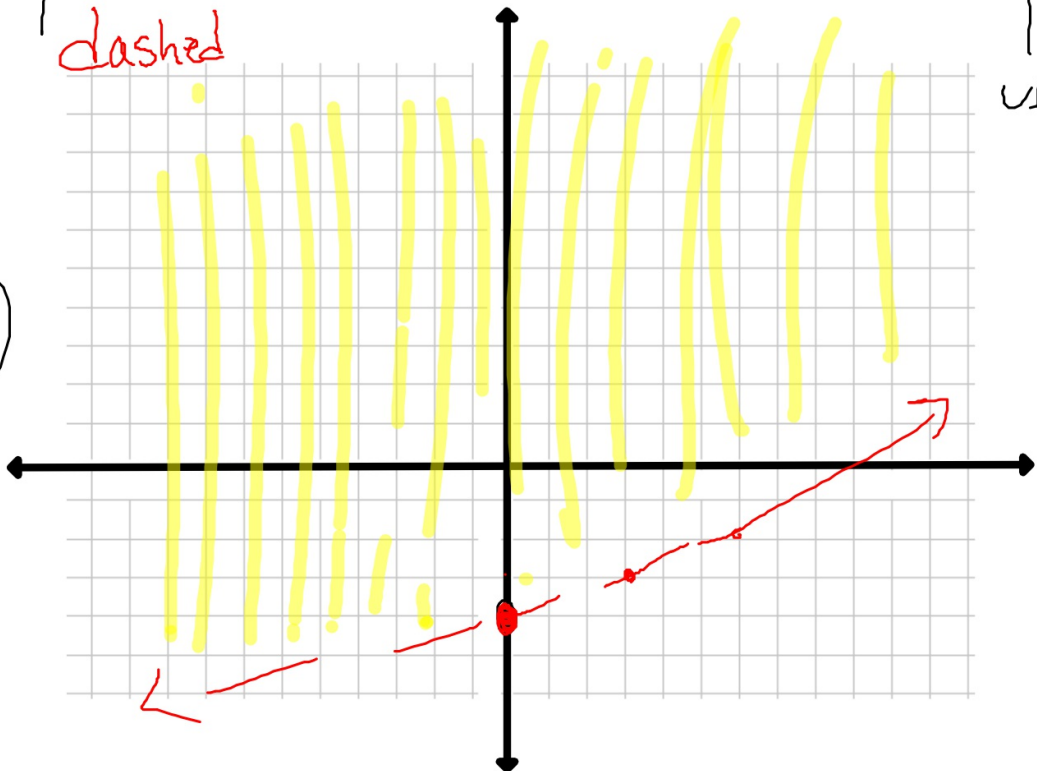
$$y > \frac{1}{3}x - 4$$

dashed

greater > shade
up

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

y-int
(0, -4)



H.W. Pg 351
17-24
All

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