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Date:

# Graphing linear equalities and inequalities.

$$\text{slope} = \frac{\text{rise}}{\text{run}} = \frac{\Delta y}{\Delta x}$$

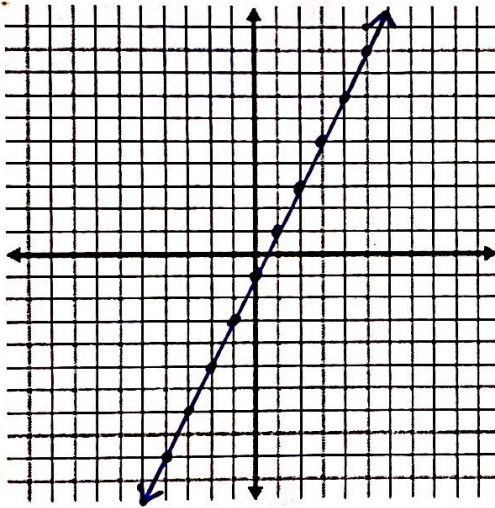
## Useful reminders for graphing.

- First solve for y and put the equation in  $y = mx + b$  form.  $m = \text{slope}$   $b = \text{y-intercept}$
- Start by graphing the y intercept, b, on the y axis.
- Use the slope, b, to then find a second point on your line by using rise over run.
- Once you have two points you can draw a line through your points.
- For inequalities, you will use a solid line if the inequality is  $\leq$  or  $\geq$
- You will use a dashed line if the inequality is  $<$  or  $>$
- For inequalities you will shade the region to represent the less than or greater than.

1)  $y = 2x - 1$

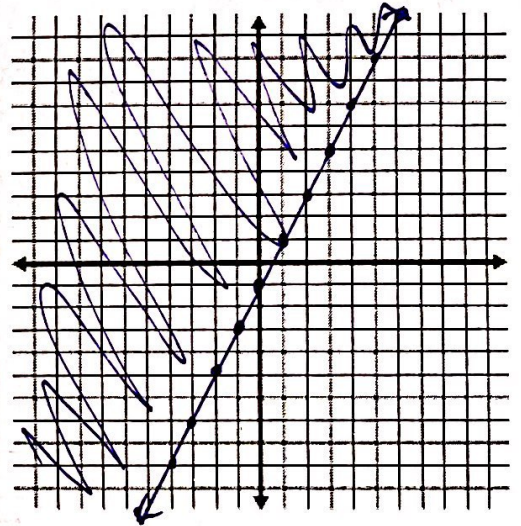
$$m = \frac{2 \uparrow}{1 \rightarrow}$$

y-int = -1



2)  $y \geq 2x - 1$

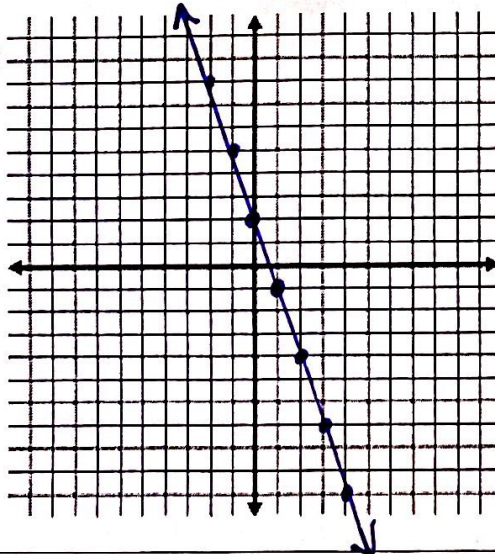
same as  
(1) but  
shade  
above  
line



3)  $y = -3x + 2$

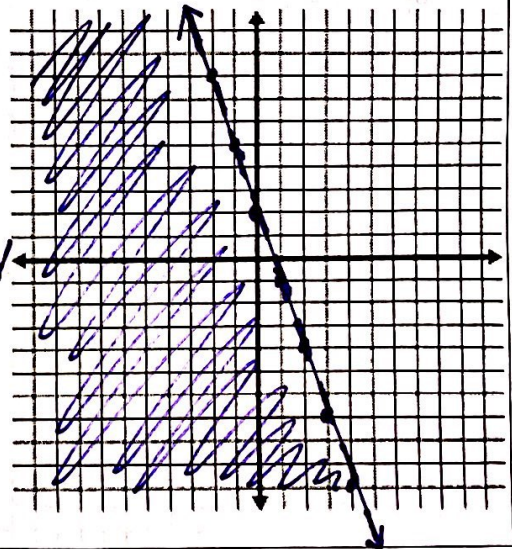
$$m = \frac{-3 \downarrow}{1 \rightarrow}$$

y-int: 2



4)  $y < -3x + 2$

same as  
(3) but  
shade  
below  
use dashed  
line



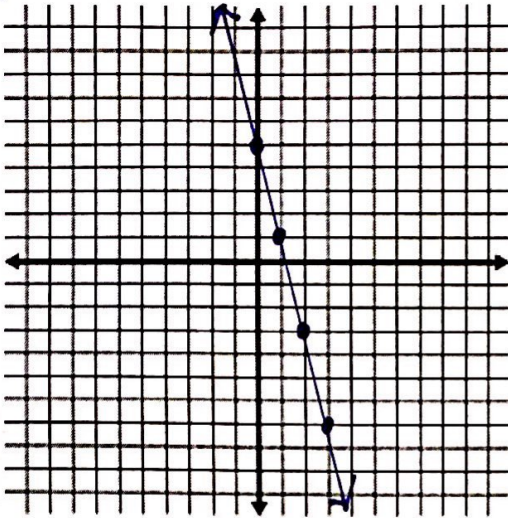
$$5) \quad y + 4x = 5$$

$$\quad -4x \quad -4x$$

$$y = -4x + 5$$

$$m = \frac{-4}{1} \downarrow \rightarrow$$

$$y\text{-int} = 5$$



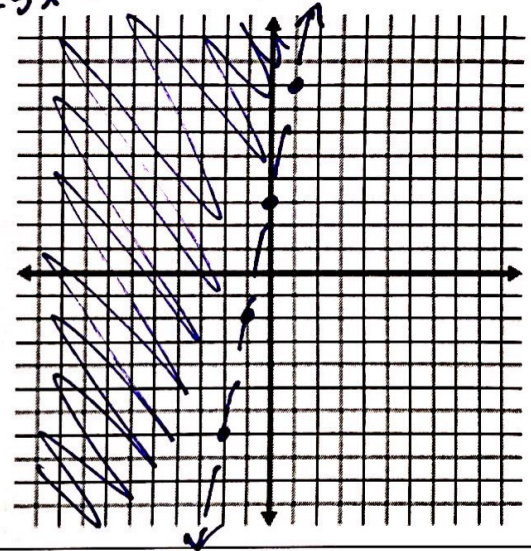
$$6) \quad y - 5x > 3$$

$$\quad +5x \quad +5x$$

$$y > 5x + 3$$

$$m = \frac{5}{1} \uparrow \rightarrow$$

$$y\text{-int} = 3$$



$$7) \quad 2y + 3x = 4$$

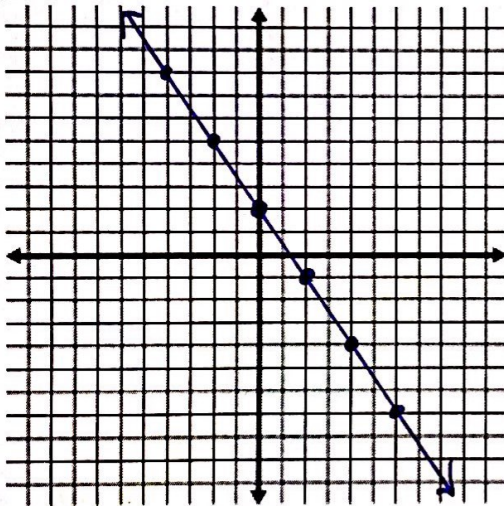
$$\quad -3x \quad -3x$$

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

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

$$m = \frac{-3}{2} \downarrow \rightarrow$$

$$y\text{-int} = 2$$



$$8) \quad \frac{3x}{-3x} - 4y \leq 12$$

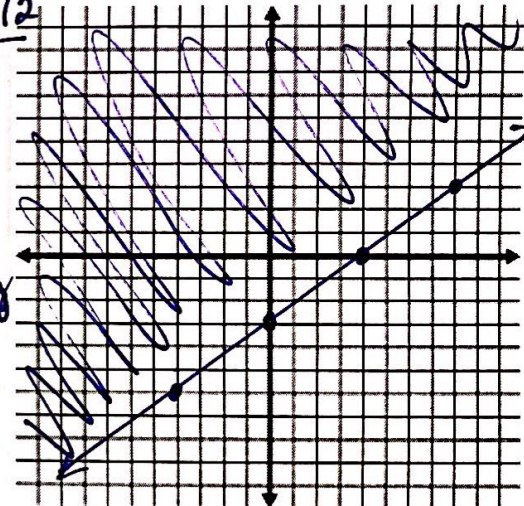
$$\quad \quad \quad -3x$$

$$-4y \leq -3x + 12$$

$$\frac{-4y}{-4} \leq \frac{-3x + 12}{-4}$$

$$y \geq \frac{3}{4}x - 3$$

flip the sign when dividing by a negative



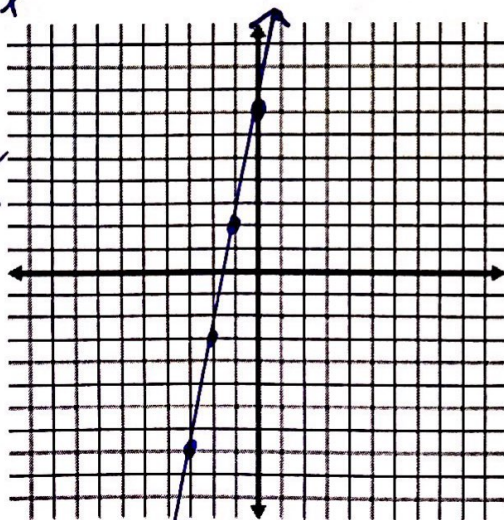
$$9) \quad -5x + y = 7$$

$$\quad +5x \quad +5x$$

$$y = 5x + 7$$

$$m = \frac{5}{1} \uparrow \text{ or } \leftarrow$$

$$y\text{-int} = 7$$



$$10) \quad 6y + 4x > -48$$

$$6y > -4x - 48$$

$$y > \frac{-2}{3}x - 8$$

$$m = \frac{-2}{3} \downarrow \rightarrow$$

$$y\text{-int} = -8$$

