

# Lecture 09/06/23 Graphs of Linear Equations

HW Due

~~HW8~~

HW8 Today

HW9 Sunday

HW10 Mond

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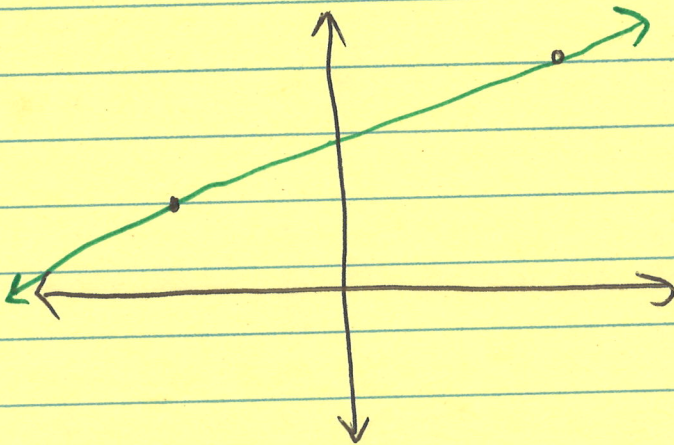
Today: Lecture Work on problems from last time + today.

Quiz 2 on Friday.

## Graphs of Linear Lines:

**Fact:** Any line is uniquely determined by two points!

Eg



So to ~~draw~~ <sup>determine</sup> a line all we need to two points on it!

~~Graphing~~ ~~Back to table~~

Defn: ~~A linear equation of the form  $ax + cy = d$~~   
The graph of a linear equation  $ax + cy = d$  is called a linear line.

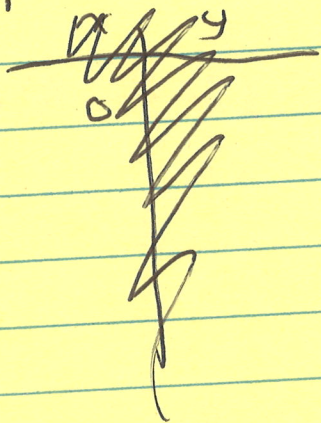
Let's see why!



Ex: Given ~~xxxx~~ Graph the ~~Equation~~

Graph the equation  $2x - 5y = 10$

Step 1: ~~create a table~~ Solve for y



$$2x - 5y = 10$$

$$-5y = 10 - 2x$$

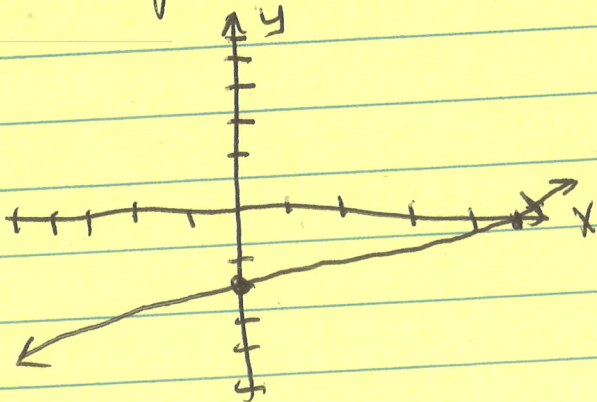
$$y = \frac{10 - 2x}{-5}$$

$$y = \frac{2}{5}x - 2$$

Step 2: Make a table

x	y
0	-2
5	0
-5	-4
$-\frac{5}{2}$	-3

Step 3: Plot any two points from table and draw a line through them

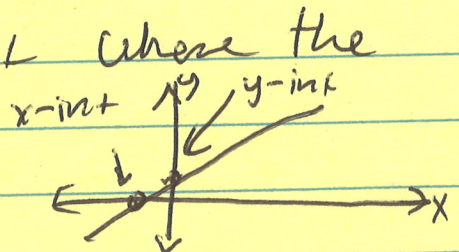




~~Notes on the page~~ There are two points ~~of~~ on linear lines that are very useful!

Defn: The x-intercept is the point where the line crosses the x-axis

The y-intercept is the point where the line crosses the y-axis



Ex: Find the x-int and y-int of  $5x - 4y = 5$  and graph it.

x-int: set  $y=0$  solve for  $x$ .

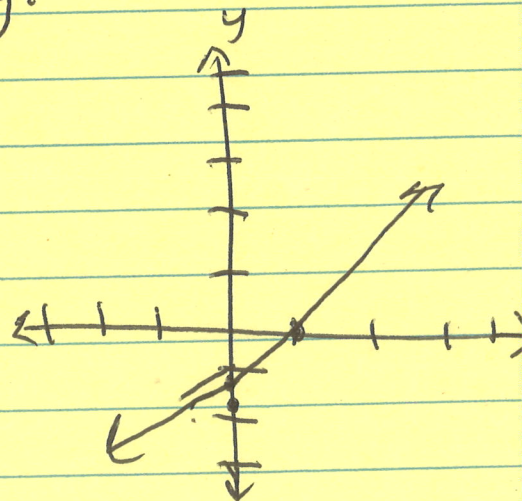
$$\begin{aligned}5x - 4(0) &= 5 \\5x &= 5 \\x &= 1\end{aligned}$$

$$\text{x-int} = (1, 0)$$

y-int set  $x=0$  solve for  $y$ .

$$\begin{aligned}5(0) - 4y &= 5 \\y &= \frac{-5}{4}\end{aligned}$$

$$\text{y-int} = (0, -5/4)$$



We have two points! So we can graph!