

# MA 109: September 8

Linear Functions: Slope and Equations

## Start of Class

### Instructor Information

Name:

Email:

Office Hours:

## Warm-up Questions

## Notes

### Writing Equations of Linear Functions

Step 1: Template:  $f(x) = mx + b$ , where  $m$  is slope

Step 2: plug in slope for  $m$

Step 3: plug in a point to solve for  $b$

Example: Write the equation of the line with slope  $-3$  and goes through the point  $(2,5)$ .

①  $f(x) = mx + b$

②  $f(x) = -3x + b$

③  $5 = -3(2) + b$

$5 = -6 + b$

$+6 \quad +6$

$11 = b$

$x \ y$

$$f(x) = -3x + 11$$

What about y-intercepts?

$b$  is the y-intercept, but you don't need that shortcut. The earlier strategy still works

Example: Write the equation of the line with slope  $5$  and y-intercept  $(0,7)$ .

①  $f(x) = mx + b$

②  $f(x) = 5x + b$

③  $7 = 5(0) + b$

$7 = 0 + b$

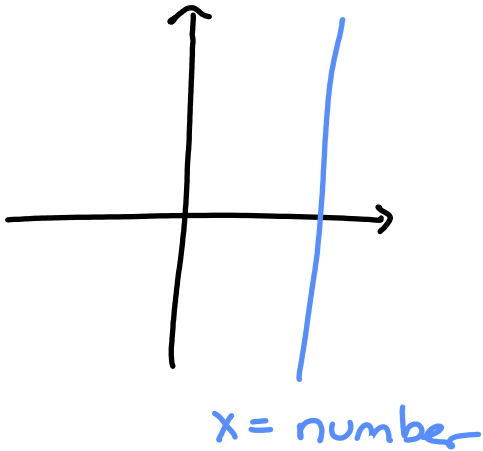
$7 = b$

$x \ y$

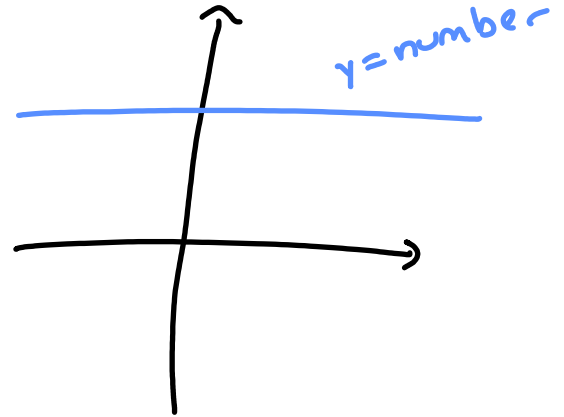
$$f(x) = 5x + 7$$

Example: Write the equation of the vertical line that goes through the point  $(-7, 8)$ .

Vertical



horizontal



vertical line through  $(-7, 8)$   
 $x = \text{number}$   $x$

answer:

$$x = -7$$

## End of Class

Write a summary of what you learned today:

What questions do you have about the material from today?

What do you need to do between now and the next class meeting?