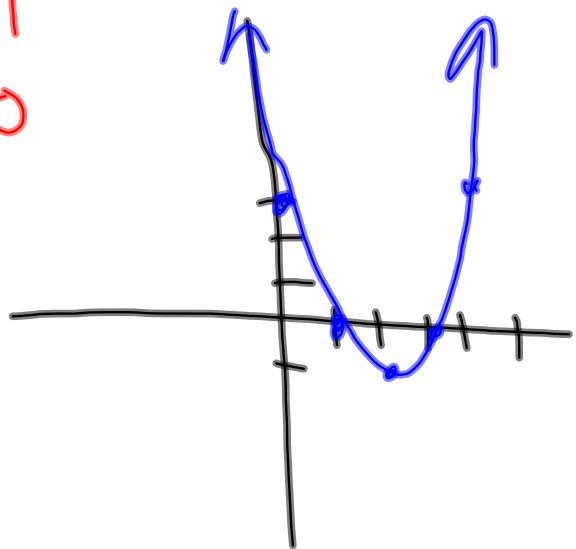


## 2.5 Graphs of functions

To graph a function, make a table of values.

Ex:  $f(x) = x^2 - 4x + 3$

x	Process	y
0	$(0)^2 - 4(0) + 3$	3
1	$(1)^2 - 4(1) + 3$	0
2	$(2)^2 - 4(2) + 3$	-1
3	$(3)^2 - 4(3) + 3$	0
4	$(4)^2 - 4(4) + 3$	3



$$\underline{f(x) = mx + b}$$

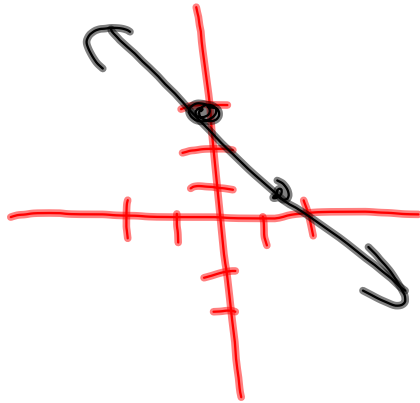
↓                    ↓  
Slope            y-int

Ex:

$$f(x) = -2x + 3$$

$$y = -2x + 3$$

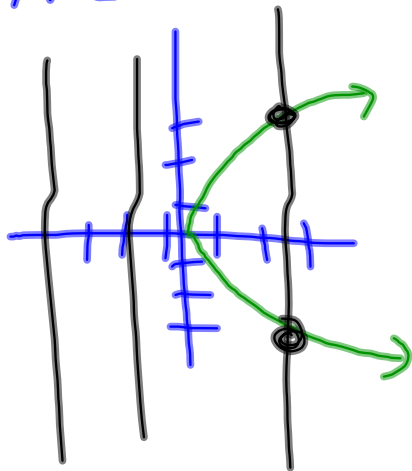
$$b = 3 \quad m = -\frac{2}{1} = \frac{\text{rise}}{\text{run}}$$



# Vertical Line test

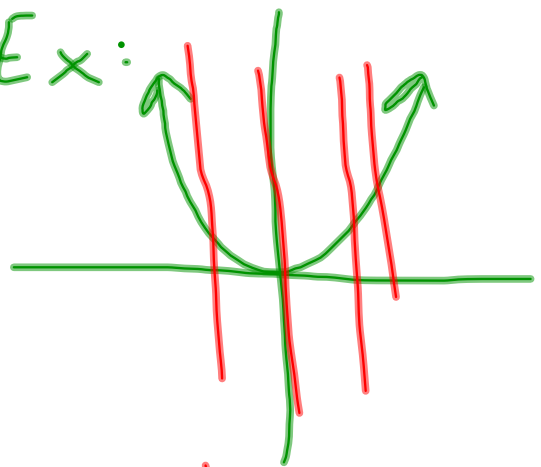
Are the following functions

Ex:

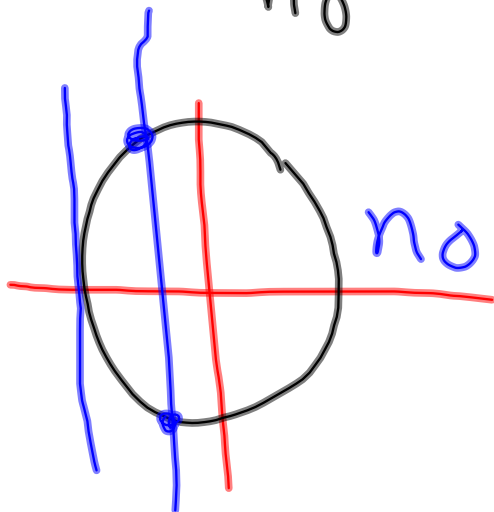


no

Ex:



yes



no

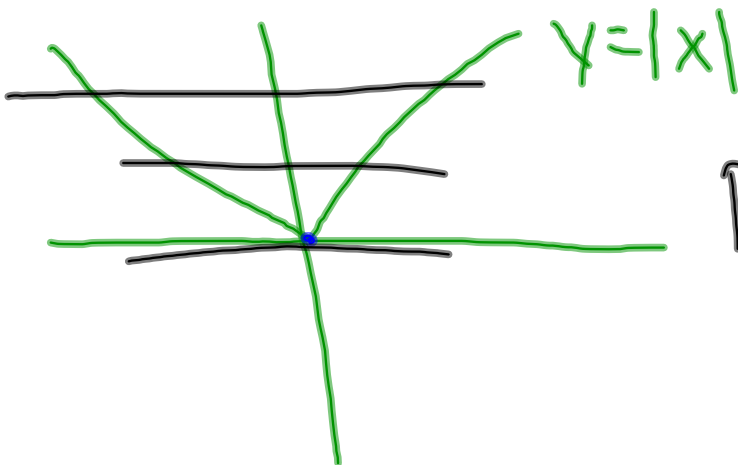
## Domain + Range

### Domain:

- ① 0 in the denominator
- ② negative under the square root.

### Range-Y-values

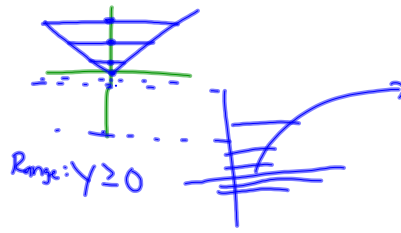
Graph on graphing calculator



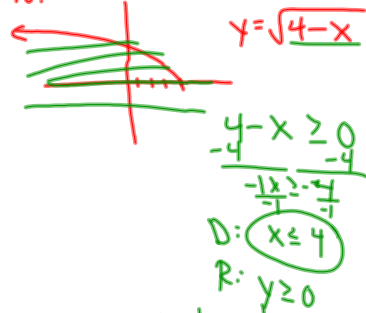
$$D: \mathbb{R}$$

$$R: y \geq 0$$

22.



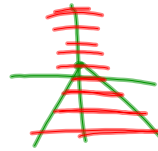
48.



46.  $Q(t) = 1 - |t+1|$

D:  $\mathbb{R}$

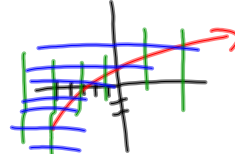
R:  $y \leq 1$



38.  $f(x) = -2$



30.  $h(x) = \sqrt{x+5} - 2$



$$\begin{array}{r} x+5 \geq 0 \\ -5 \quad -5 \\ \hline x \geq -5 \end{array}$$

D:  $x \geq -5$     R:  $y \geq -2$

50.  $f(x) = x^3 - 4$

D:  $\mathbb{R}$

R:  $\mathbb{R}$



32.  $f(x) = \sqrt{16-x^2} + 1$

$$\begin{array}{r} 16-x^2 \geq 0 \\ -16 \quad -16 \\ \hline -x^2 \geq -16 \end{array}$$

$$\frac{-x^2}{-1} \geq \frac{-16}{-1}$$

D:  $\sqrt{x^2} \leq \sqrt{16}$

$-4 \leq x \leq 4$

R:  $2 \leq y \leq 5$

## Piecewise defined functions

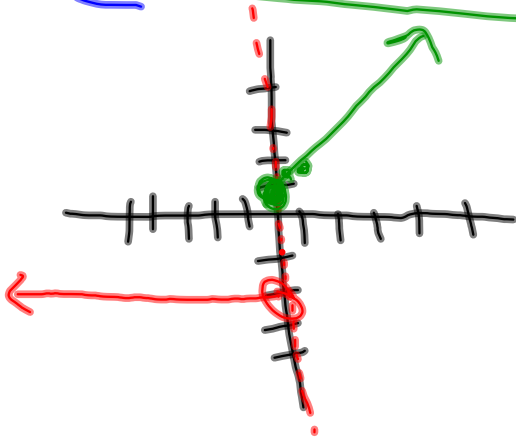
$$f(x) = \begin{cases} -2, & x < 0 \\ x+1, & x \geq 0 \end{cases}$$

$$y = -2$$

$$y = x + 1$$

$$b = 1$$

$$m = \frac{1}{1} = \frac{\text{rise}}{\text{run}}$$



HW: p. 140

1-57 odd

skip 79, 51, 53