

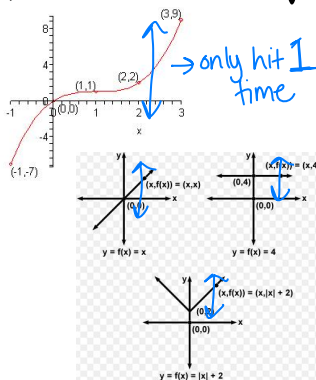
Characteristics of Functions Foldable

Function	Not a Function	
Not a Function x-intercept	y-intercept	
domain	range	
maximum	minimum	
increasing	decreasing	constant
end behavior		

Function

* Passes Vertical Line Test

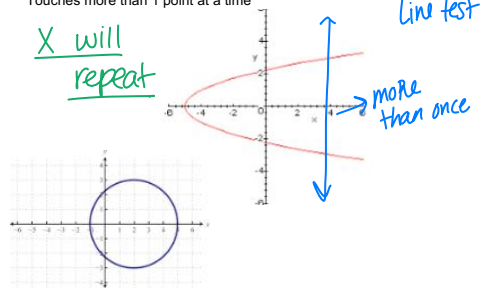
* ~~X~~ CANNOT repeat



Not a function

* Does NOT pass the Vertical Line Test

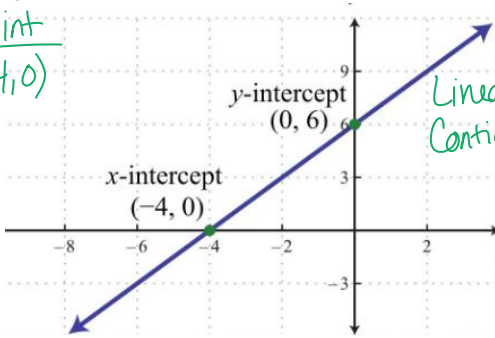
Touches more than 1 point at a time



x - intercept

- * Point(s) that cross the x-axis $(\#, 0)$
- * Written as a coordinate (x-value, 0)
- * Also known as: roots, solutions, and zeros - can write just the number

X-int
 $(-4, 0)$



y - intercept

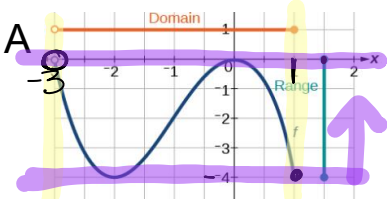
- * Point that cross the y-axis
- * Written as a coordinate $(0, \#)$

y-int
 $(0, 6)$

domain

- * x-values that pertain to the graph (left to right)
- * written in interval or inequality notation
- Example A: Interval: ~~_____~~
- Inequality: ~~_____~~
- Example B: ~~_____~~

EX: [lowest x-value, highest x-value] $[]$ equal to



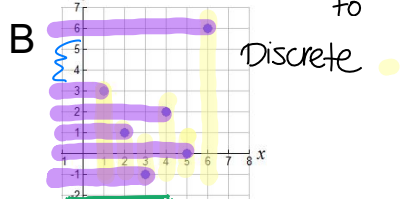
Domain: x-values
Interval: $(-3, 1]$
Inequality: $-3 < x \leq 1$

B $\rightarrow \{1, 2, 3, 4, 5, 6\}$

range

- * y-values that pertain to the graph (low to high)
- * written in interval or inequality notation
- Example A: Interval: ~~_____~~
- Inequality: ~~_____~~
- Example B: ~~_____~~

(lowest y-value, highest y-value) $()$ not equal to

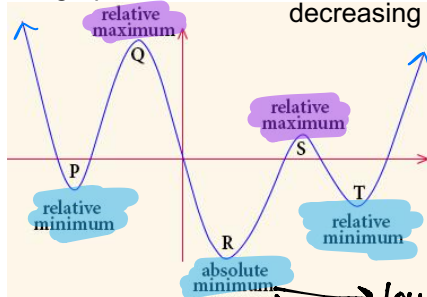


Range: y-values
* Bottom to top
Interval: $[-4, 6]$
Inequality: $-4 \leq y \leq 6$

B $\rightarrow \{-1, 0, 1, 2, 3, 6\}$

maximum (high) hills

- * Written as a coordinate
- * Absolute Maximum: highest of ALL the y-values *only one*
- **No absolute if arrows on end going up**
- * Relative Maximum: other high y-values where the graph is increasing



$(1, -14)$ → lowest point on graph

*arrows go forever

minimum (low) valleys

- * Written as a coordinate
- * Absolute Minimum: lowest of ALL the y-values *only one*
- **No absolute if arrows on end going down**
- * Relative Minimum: other low y-values where the graph is decreasing

increasing

- * written as an interval
- * **x-values** where the graph goes up from left to right

decreasing

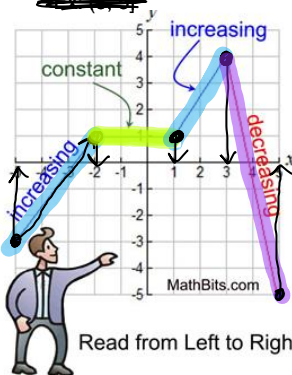
- * written as an interval
- * **x-values** where the graph goes down from left to right

constant

- * written as an interval
- * **x-values** where the y-value stays the same from left to right

** only x-values*

Increasing
 $(-5, -2)$
 $(1, 3)$



Read from Left to Right

Constant
 $(-2, 1)$

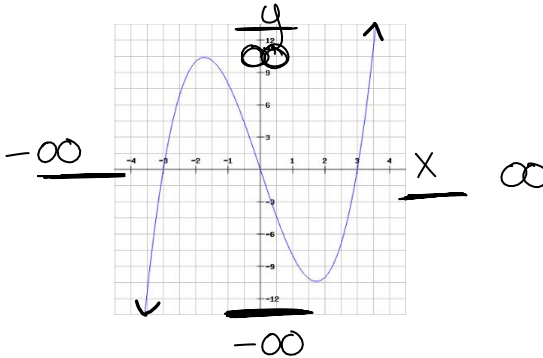
Decreasing
 $(3, 5)$

end behavior

- * look at where your arrows are pointed on each side
- * each arrow will have a direction for the x-value and y-value
- * always approaching negative and positive infinity

Example: As $x \rightarrow -\infty$, $y \rightarrow -\infty$

As $x \rightarrow \infty$, $y \rightarrow \infty$



Linear Functions

Equation

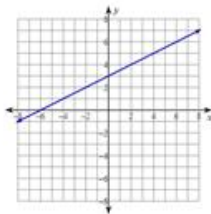
$y = mx + b$
 $Ax + By = C$
 "plain x and y"

EX: $y = 2x + 3$

EX: $y = -4x$

EX: $5x - 7y = 1$

LINE



Graph

X has a constant rate
 Y has a constant rate

Table

x	y
1	5
3	10
5	15
7	20