Characteristics of Functions Foldable

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

→ only 1 time
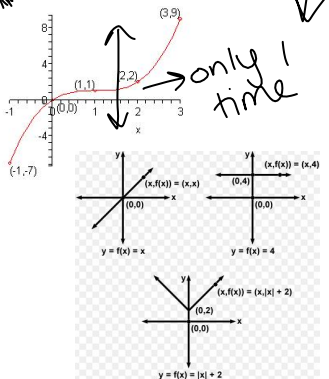
Not a function

* Does NOT pass the Vertical Line Test

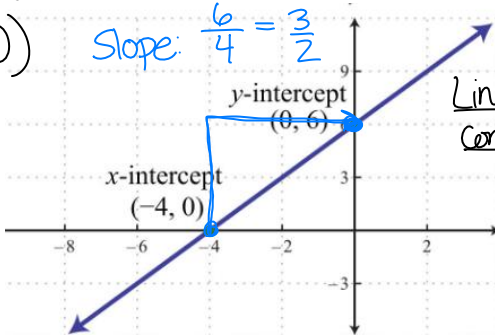Touches more than 1 point at a time

X repeats

→ hits more than 1
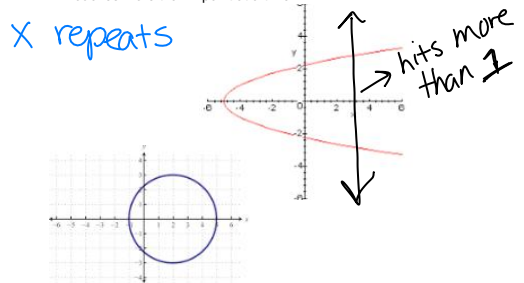
x - intercept

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

$(-4,0)$

Slope: $\dfrac{6}{4} = \dfrac{3}{2}$

y-intercept
(0, 6)

x-intercept
(−4, 0)

Linear
Continuous

y - intercept

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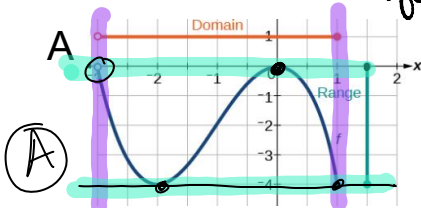* Written as a coordinate (0,y-value)

$(0,\#)$

$(0,6)$

−8   −6   −4   −2   2

9

3

−3

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

A

Domain
Range
f

Ⓐ

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

B

y
7
6
5
4
3
2
1
−1
−2
1 2 3 4 5 6 7 8 x

Ⓑ
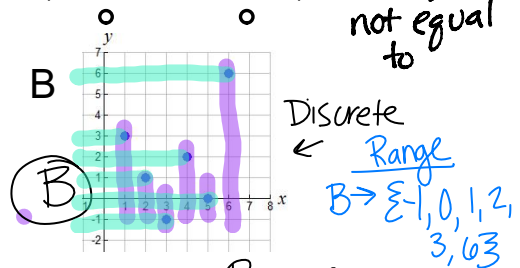
Discrete
← Range
$B \rightarrow \{-1, 0, 1, 2, 3, 63\}$

Dom: $(-3, 1]$ Interval $\Big\}$ A

$-3 < x \leq 1$ Inequality $\Big\}$

$B \rightarrow \{1, 2, 3, 4, 5, 63\}$

Range
$\{[-4, 0]\}$ Inter.
$\{-4 \leq y \leq 0\}$ Inequ.
$\searrow$ A

maximum

* 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

minimum

* 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
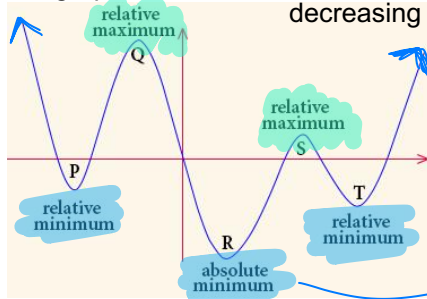
arrows means for ever and ever

only one → lowest pt on graph

relative maximum
Q
relative maximum
S
P
relative minimum
R
T
relative minimum
absolute minimum

increasing

* written as an interval

* **x-values** where the graph goes up from left to right

only X-values

Increase
(-5,-2)
(1, 3)

decreasing

* written as an interval

* **x-values** where the graph goes down from left to right

increasing

constant

increasing

decreasing

MathBits.com

Read from Left to Right

constant

* written as an interval

* **x-values** where the y-value stays the same from left to right
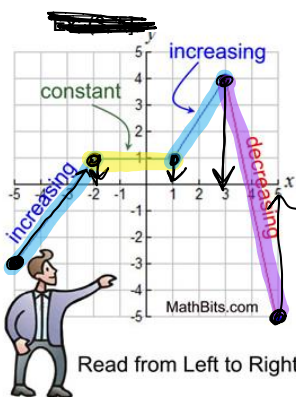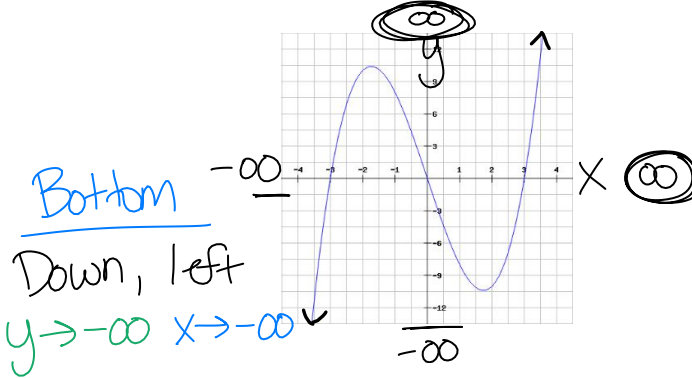
Constant
(-2, 1)

Dec
(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 ⟶ $-\infty$, y ⟶ $-\infty$

As x ⟶ ∞, y ⟶ ∞

∞

Bottom

$-\infty$

Down, left

$y \to -\infty$ $x \to -\infty$

$-\infty$

X ∞

✳ ARROWS

Top

Up, Right

$y \to \infty$

$x \to \infty$

Linear Functions
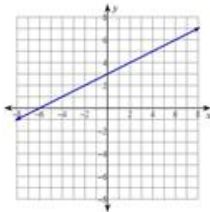
	Equation	$y = mx + b$ $Ax + By = C$ "plain x and y"
Graph LINE		EX: $y = 2x + 3$ EX: $y = -4x$ EX: $5x - 7y = 1$
	Table	X has a constant rate Y has a constant rate | x	y
1	5
3	10
5	15
7	20	