1-1

Attributes of a function

Obj: I can identify different attributes of a function

review

Attributes

- Domain
- Range
- Increasing
- Decreasing
- x-intercepts
- y-intercepts
- Even/Odd/Neither
- one-to-one
- Maximum
- Minimum

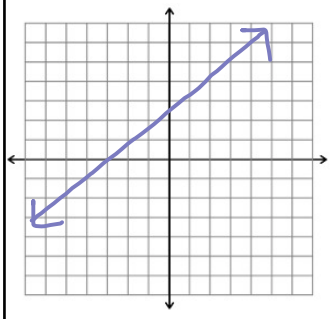
End Behavior

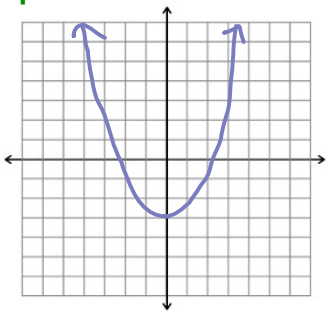
Asymptotes/Discontinuities

Domain: Represents the **x-values.** These are read left to right
Range: Represents the **y-values.** These are read from low to high

Interval notation:
(smallest value, biggest value)
(,) values not included [,] values included

Examples

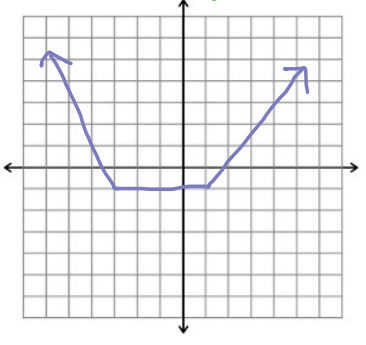




Increasing: as you move from left to right the y-values increase
Decreasing: as you move from left to right the y-values decrease
Constant: as you move from left to right the y-values do not change

this behavior is reported using interval notation for the **X-VALUES** where the graph has a certain behavior

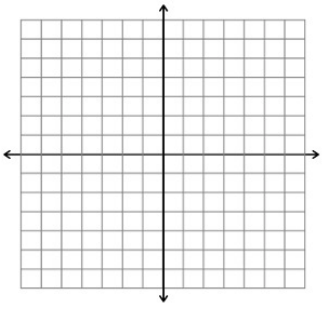
Example



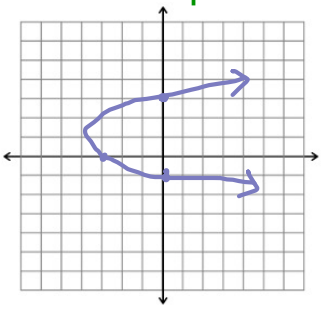
x-intercepts: where the graph crosses the x-axis

y-intercepts: where the graph crosses the y-axis

These are written as ordered pairs

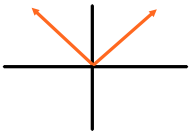


Example

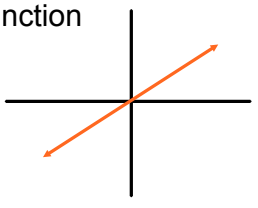


Symmetry: Even/Odd/Neither

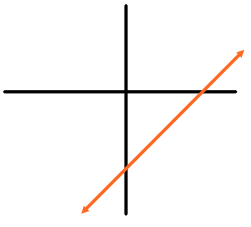
Even: If the graph is symmetric to the y-axis, it is an even function



Odd: If the graph is symmetric to the origin (quadrants I and III are the same, and quadrants II and IV are the same), it is an odd function

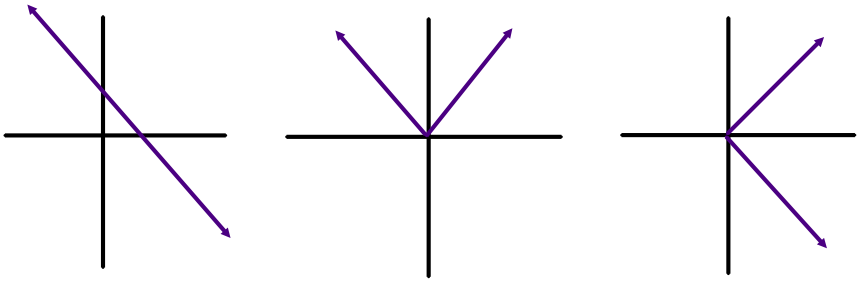


Neither: If it doesn't fit either odd or even, then it is neither



One-to-One

If a graph passes both the vertical line test *and* the horizontal line test it is one-to-one



Extrema

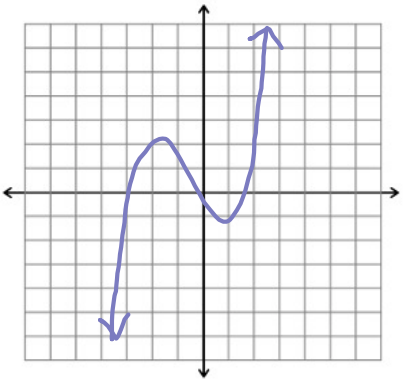
maximums

- relative (local)
- absolute (upper bound)

minimums

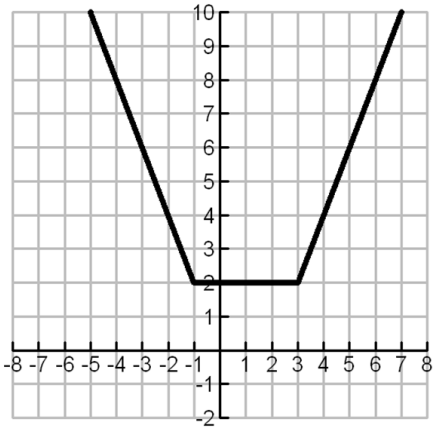
- relative (local)
- absolute (lower bound)

Example



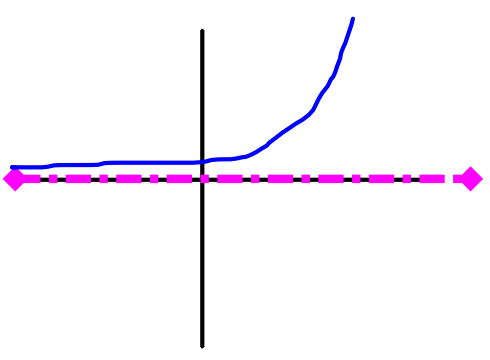
End Behavior

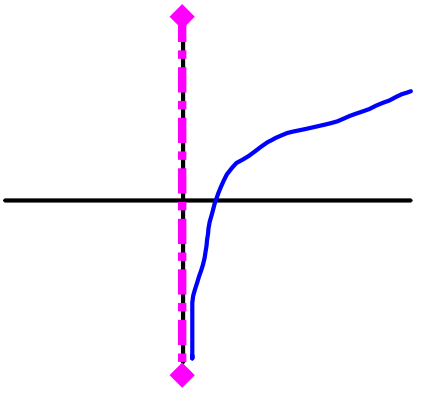
What the y-values are approaching on each side



Asymptotes

A line that a graph approaches but never touches*



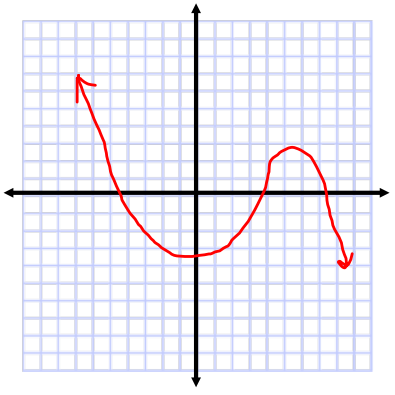


*This is true for vertical asymptotes, we will go into more detail for horizontal asymptotes later

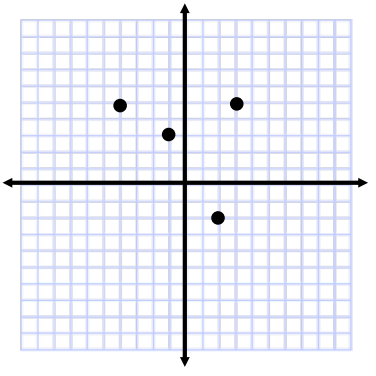
Continuous: A function is continuous if you can draw it in one motion without picking up your pencil.

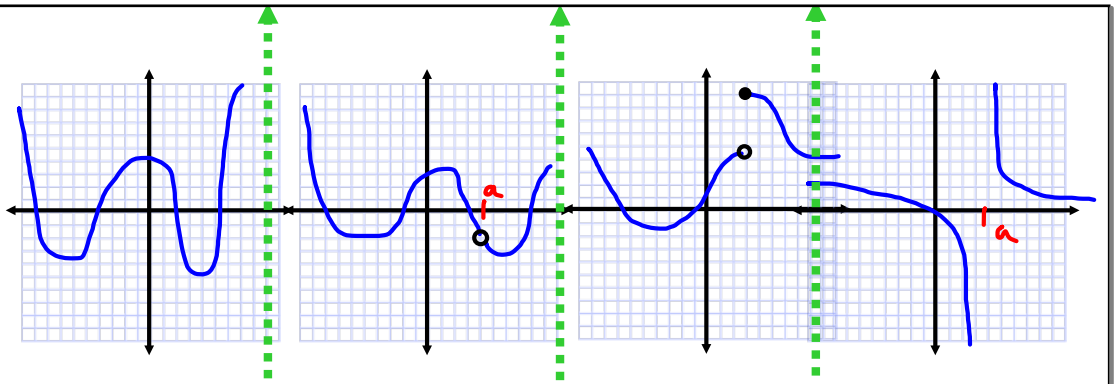
Discrete: made of ordered pairs or individual parts

Continuous
Function



Discrete
Function





Continuous for all values of x

Removable discontinuity at x=a

(removable because we could fill it)

Jump discontinuity

(can't plug the hole)

Infinite discontinuity at x=a