

1-1 Parent Functions

Objectives:

1. I can graph the parent functions
2. I can analyze the key features of a graph

Domain & Range

Domain: x-values - input
read x's from left to right (smallest to largest)

*some functions have domain restrictions

can't have a neg. # in a sq. root
to find: set the radicand ≥ 0 and solve for x.

Range: y-values - output
read y's from bottom to top (smallest to largest)

x & y intercepts

y-intercepts: where the graph crosses the y-axis and $x = 0$

x-intercepts: where the graph crosses the x-axis and $y = 0$

intercepts are points on a graph & should be written as ordered pairs!!! (x,y)

$$2x + 3y = 6$$

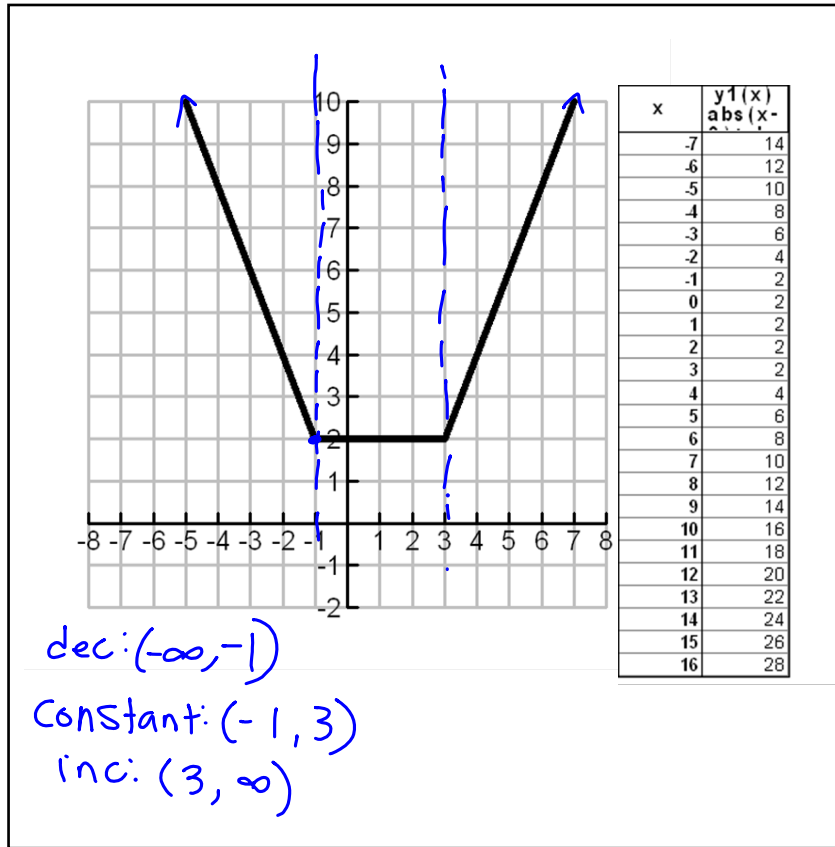
x-intercept ($y = 0$)

y-intercept ($x = 0$)

Increasing, Decreasing and Constant

- 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



Symmetry: Even/Odd/Neither/One to One

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

Odd: If the graph is symmetric to the origin, it is an odd function

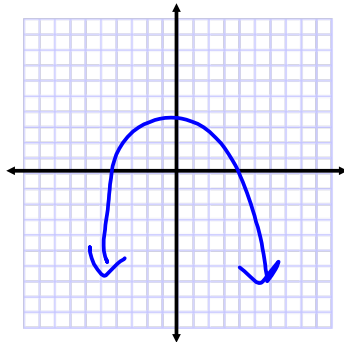
Neither: If it doesn't fit either odd or even, then it is neither

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

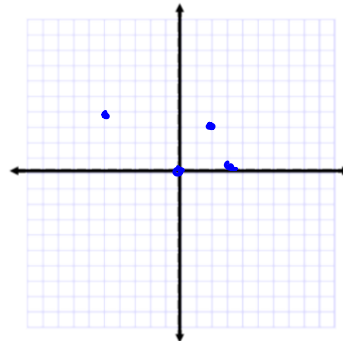
Continuous: A function is continuous if you can draw it in one motion without picking up your pencil.

Discrete: made of ordered pairs or individual parts

Continuous
Function

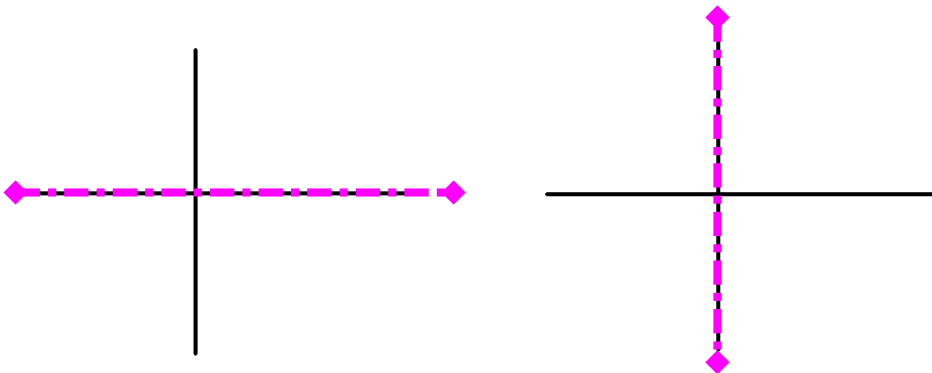


Discrete
Function



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

End Behavior / Limits

as x approaches _____, y approaches _____

Describe end behavior using limit notation:

$$\lim_{x \rightarrow \infty} f(x) = |$$

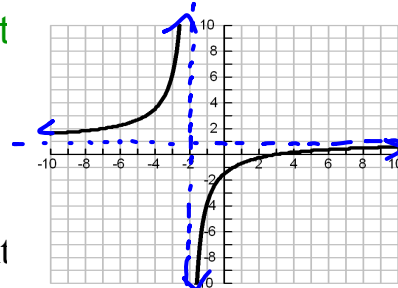
$x \rightarrow \infty$

this means the right

$$\lim_{x \rightarrow -\infty} f(x) < |$$

$x \rightarrow -\infty$

this means the left end



$$\lim_{x \rightarrow \infty} f(x)$$

$$\lim_{x \rightarrow -\infty} f(x)$$

Label Extrema & End behavior

maximums

- relative (local)
- absolute (global)

minimums

- relative (local)
- absolute (global)

