Definition

If f: I -> R (interval -> real numbers) then:

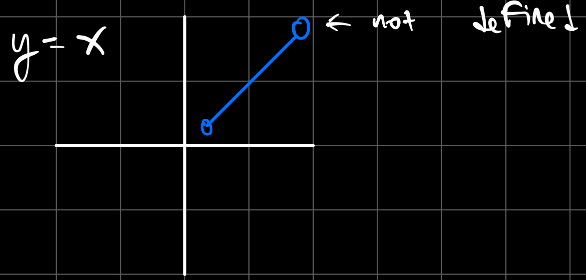
- c in I is a global maximum for f on I if $f(c) \geq f(x)$ for all x in I
- c in I is a global minimum for f on I if $f(c) \leq f(x)$ for all x in I
- c in I is a global extremum if it is either a global maximum or a global minimum

Also called *absolute* minimums/maximums

Refers to the *x-coordinate* (c, or x=c), but can also be written as:

- A point (x,y)
- x=c, at the point f(c) = y
- f(c), occurring at x=c

If f is defined on an open interval (a,b), it does not necessarily have a global min/max



If f is defined on a closed interval [a,b] it also does not necessarily have a global min/max

Extreme Value Theorem

If f is continuous on a closed interval [a,b], then there exists a c1 and c2 in [a,b] such that

$$f(c1) \leq f(x) \leq f(c2)$$

global min

global max

For all x in [a,b]

Converse is false