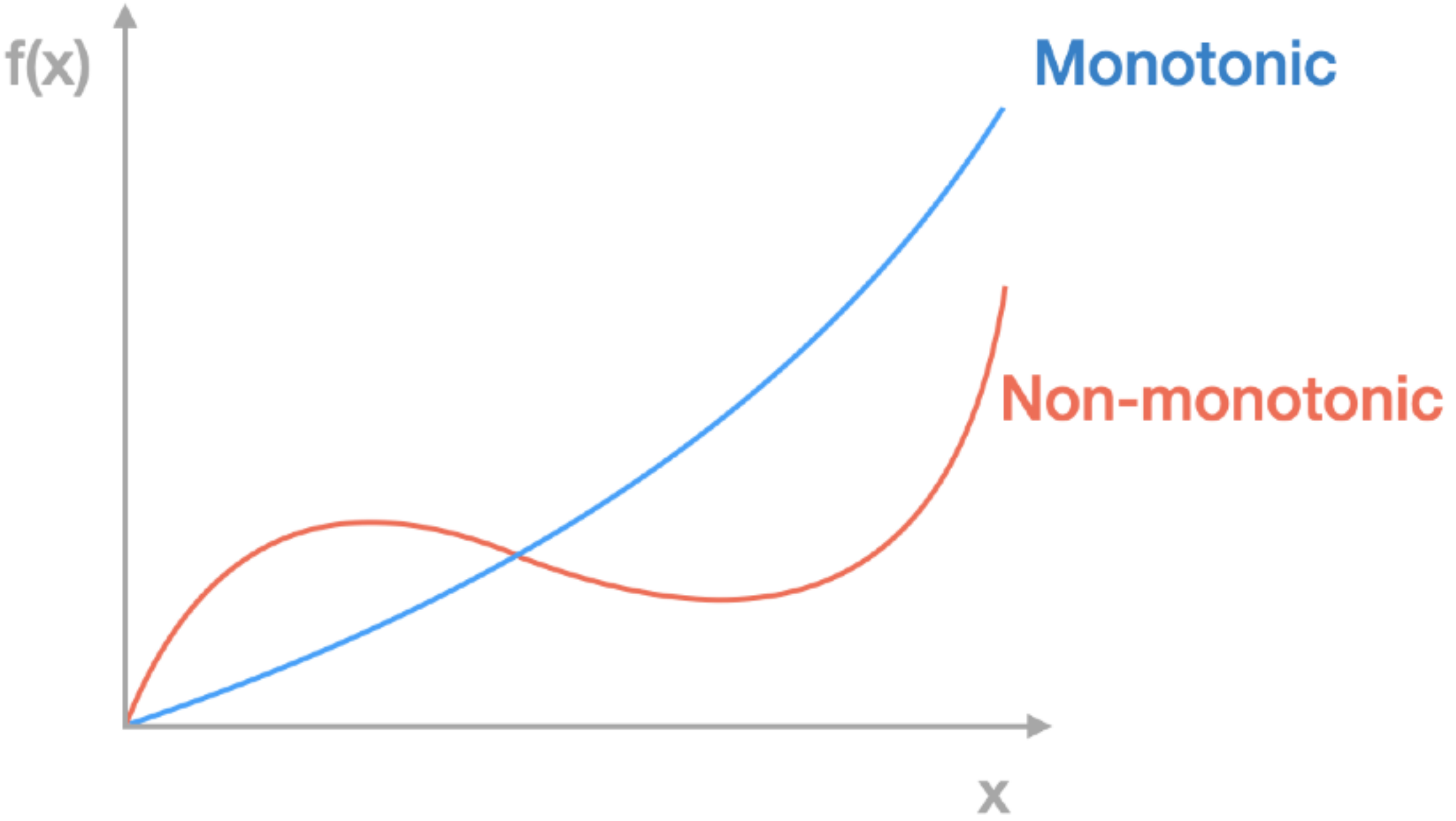
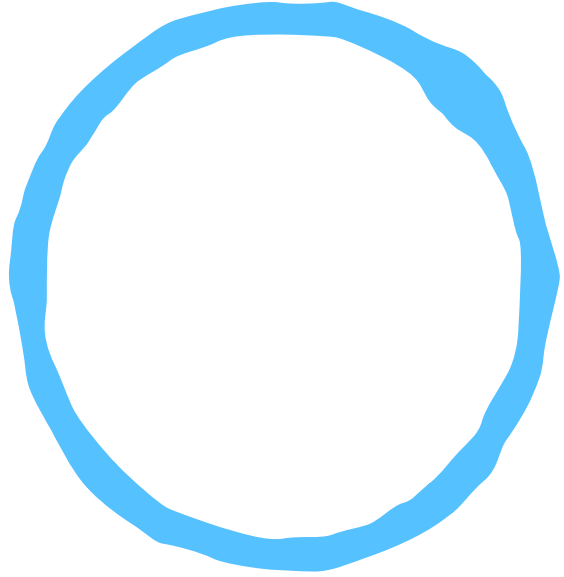
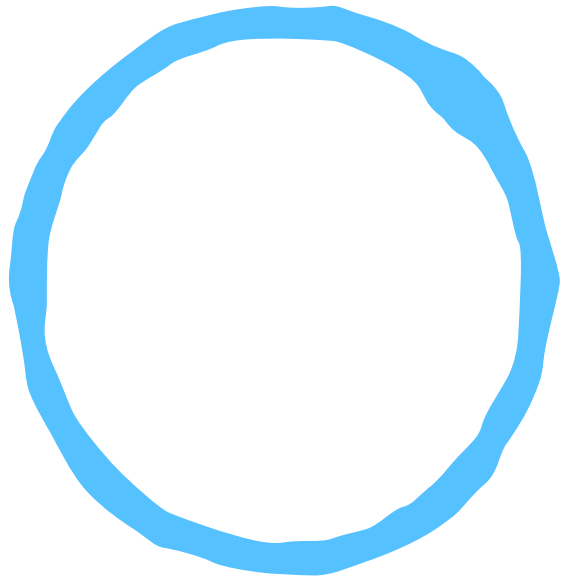
monotonic functions


f(x)
Monotonic
Non-monotonic
x

“strictly”: <



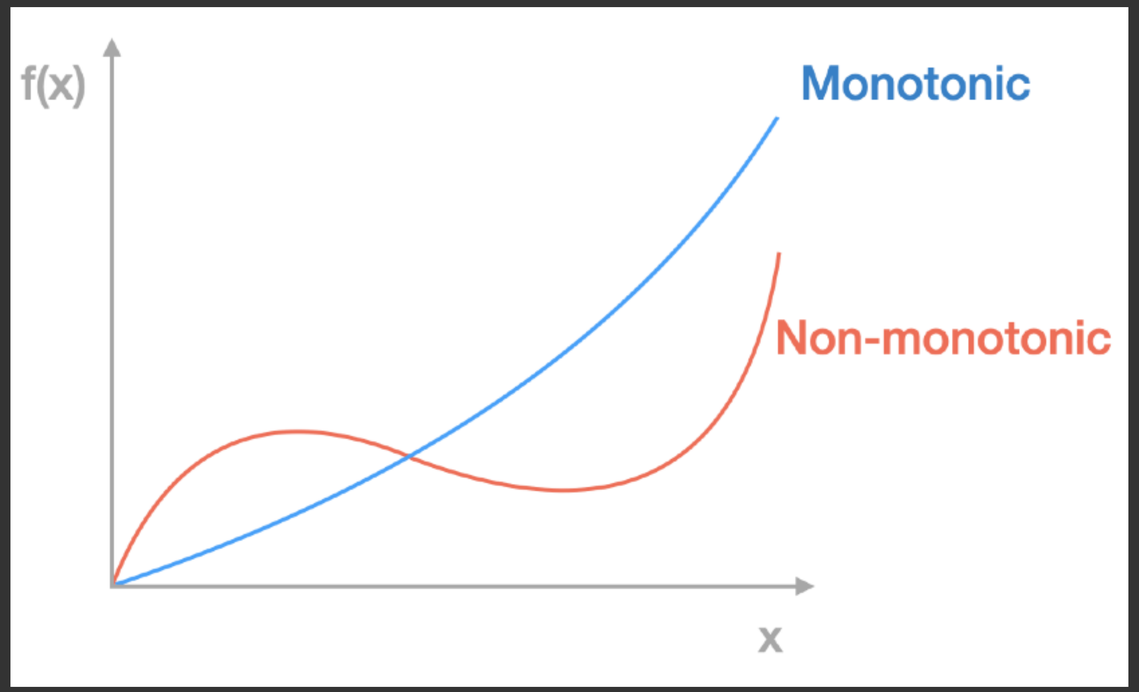
“strictly” >



example

monotonic functions

Monotonicity is the characteristic of order preservation:
it preserves the order of elements from the domain in the range.



"strictly": $<$

A function is monotonic increasing if $f(x_1) \leq f(x_2)$ whenever $x_1 < x_2 \quad \forall x_1$ and $x_2 \in \mathbb{R}$

"strictly" $>$

A function is monotonic decreasing if $f(x_1) \geq f(x_2)$ whenever $x_1 > x_2 \quad \forall x_1$ and $x_2 \in \mathbb{R}$

example

$f(x) = 2x + 3$ is monotonically increasing because for any two values x_1 and x_2, then $f(x_1) < f(x_2)$ always.

monotonic functions