



# MONOTONIC FUNCTIONS

## Why

We can generalize the notion of real monotone functions to functions between any two sets with total partial orders.

## Definition

Let  $(A, \geq_A)$  and  $(B, \geq_B)$  be two partially ordered sets.  $f : A \rightarrow B$  is *isotonic* if it is order preserving and *antitonic* if it is order reversing. A function is *monotonic* if it is either antitonic or isotonic.<sup>1</sup>

## Examples

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<sup>1</sup>Future editions may modify this terminology.

<sup>2</sup>Future editions will include. A nice example is monotonic matrix functions.



