

Today's topics

- Functions
 - Notations and terms
 - One-to-One vs. Onto
 - Floor, ceiling, and identity
- Reading: Sections 1.8
- Upcoming
 - Algorithms

On to section 1.8... Functions

- From calculus, you are familiar with the concept of a real-valued function f , which assigns to each number $x \in \mathbb{R}$ a particular value $y = f(x)$, where $y \in \mathbb{R}$.
- But, the notion of a function can also be naturally generalized to the concept of assigning elements of *any* set to elements of *any* set. (Also known as a *map*.)

Function: Formal Definition

- For any sets A , B , we say that a *function* f from (or “mapping”) A to B ($f:A \rightarrow B$) is a particular assignment of exactly one element $f(x) \in B$ to each element $x \in A$.
- Some further generalizations of this idea:
 - A *partial* (non-total) function f assigns zero or one elements of B to each element $x \in A$.
 - Functions of n arguments; relations (ch. 6).