Real Functions

Why

We name functions whose domain is the real numbers.

Definition

A *real function* is a real-valued function The domain is often an interval of real numbers, but may be any non-empty set.

Notation

$f : \mathsf{R} \to \mathsf{R}$. f is a real function. To speak of functions defined on intervals, let $a, b \in \mathsf{R}$. $g : [a, b] \to \mathsf{R}$. is a real function defined on a closed interval. $h : (a, b) \to \mathsf{R}$ is a real function defined on an open interval.

We regularly declare the interval and the function in one pass: Let $f : [a, b] \to \mathsf{R}$, read aloud as "$f$ from closed a b to R." Or, let $f : (a, b) \to \mathsf{R}$ read aloud as "f from open a b to R".

Examples

Example 1. *Let $c \in \mathsf{R}$. Let $f : \mathsf{R} \to \mathsf{R}$ be such that $f(x) = c$ for every $x \in \mathsf{R}$. f is a real function.*

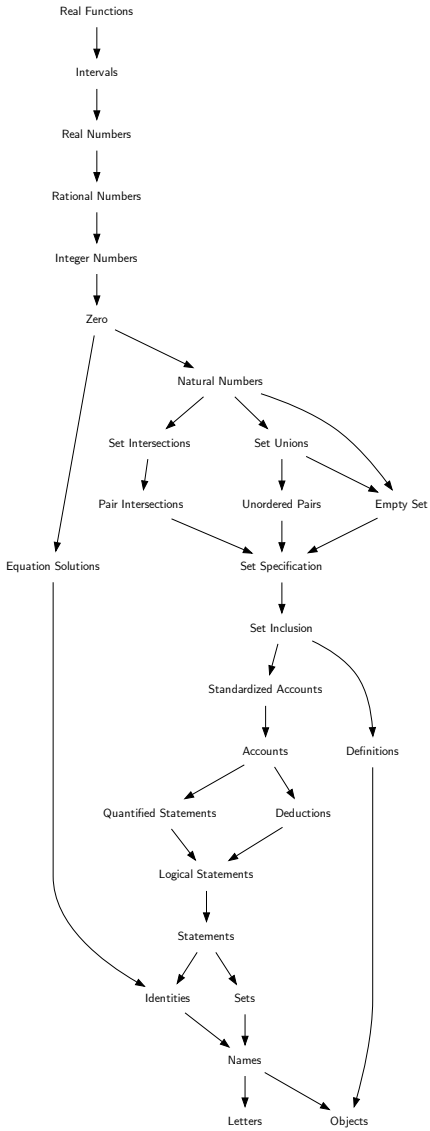
Example 2.

Let $f : \mathsf{R} to \mathsf{R}$ with $f(x) = 2x^2 + 1$ for all $x \in R$. f is a real function.

Example 3. *Let* $f : \mathsf{R} \to \mathsf{R}$ *with*

$$f(x) = \begin{cases} 1 & \textit{if } x \in \mathbf{Q} \\ 0 & \textit{otherwise.} \end{cases}$$

f *is a real function.*


Real Functions
Intervals
Real Numbers
Rational Numbers
Integer Numbers
Zero
Natural Numbers
Set Intersections
Set Unions
Pair Intersections
Unordered Pairs
Empty Set
Equation Solutions
Set Specification
Set Inclusion
Standardized Accounts
Accounts
Definitions
Quantified Statements
Deductions
Logical Statements
Statements
Identities
Sets
Names
Letters
Objects