Why

We want to solve equations with squares.

Definition

Let b be any real number. We want to find a to solve

$$a^2 = b.$$

We call a solution a a *square root* of b.

Proposition **1.** *A positive real number has two square roots.*[1]

Despite the above proposition, we still speak of *the square root* of a real number, which is the positive square root. We also speak of the *square root function* which associates a real number to its positive square root.

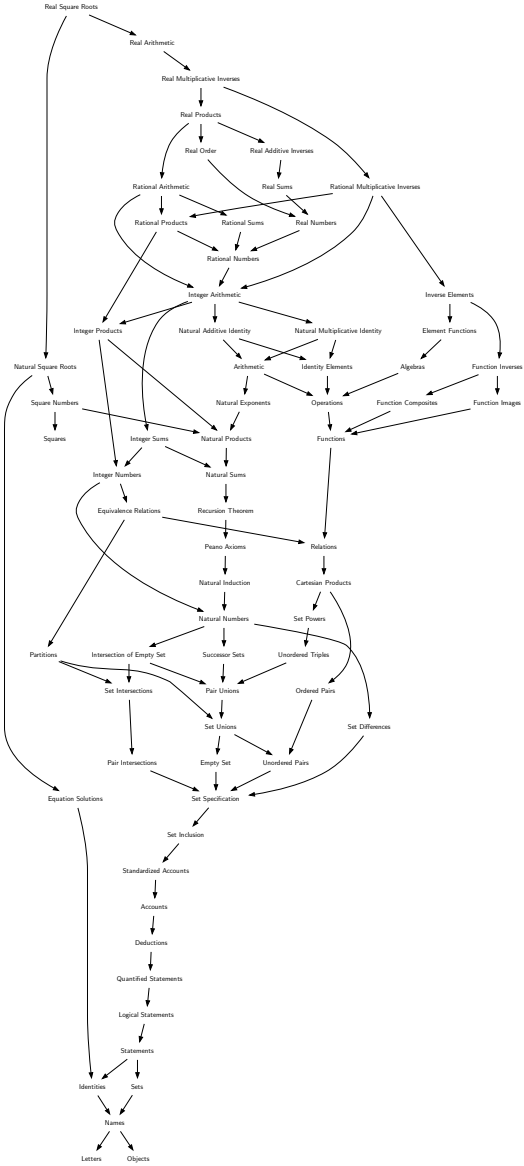
Proposition **2.** *A two roots or a positive real number are additive inverses.*[2]

Notation

As with natural numbers, we denote *the* (positive) square root of the real number $x \in \mathbf{R}$ by $\sqrt{x}$. Some authors refer to both the roots of x by writing $\pm\sqrt{x}$.

[1] Future editions will include an account.

[2] Future editions will include an account.


Real Square Roots
Real Arithmetic
Real Multiplicative Inverses
Real Products
Real Order
Real Additive Inverses
Rational Arithmetic
Real Sums
Rational Multiplicative Inverses
Rational Products
Rational Sums
Real Numbers
Rational Numbers
Integer Arithmetic
Inverse Elements
Integer Products
Natural Additive Identity
Natural Multiplicative Identity
Element Functions
Natural Square Roots
Arithmetic
Identity Elements
Algebras
Function Inverses
Square Numbers
Natural Exponents
Operations
Function Composites
Function Images
Squares
Integer Sums
Natural Products
Functions
Integer Numbers
Natural Sums
Equivalence Relations
Recursion Theorem
Peano Aciams
Relations
Natural Induction
Cartesian Products
Natural Numbers
Set Powers
Partitions
Intersection of Empty Set
Successor Sets
Unordered Triples
Set Intersections
Pair Unions
Ordered Pairs
Set Unions
Set Differences
Pair Intersections
Empty Set
Unordered Pairs
Equation Solutions
Set Specification
Set Inclusion
Standardized Accounts
Accounts
Deductions
Quantified Statements
Logical Statements
Statements
Identities
Sets
Names
Letters
Objects