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.

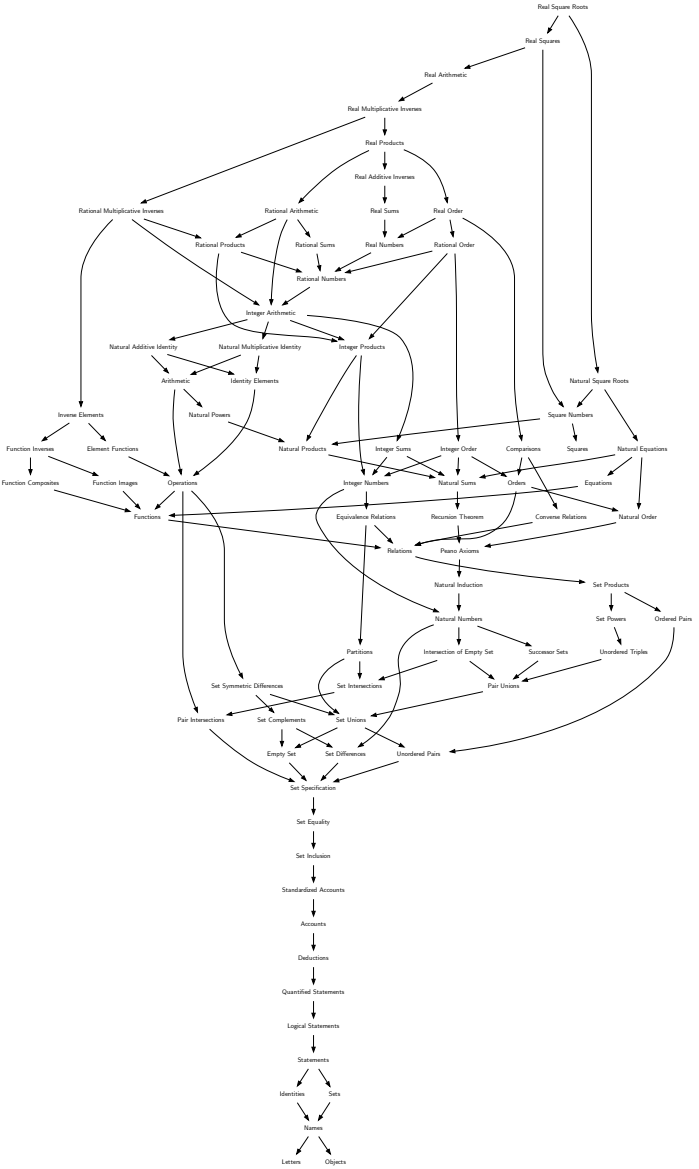
Proposition 2. *A two roots or a positive real number are additive inverses.*[2]

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