Why

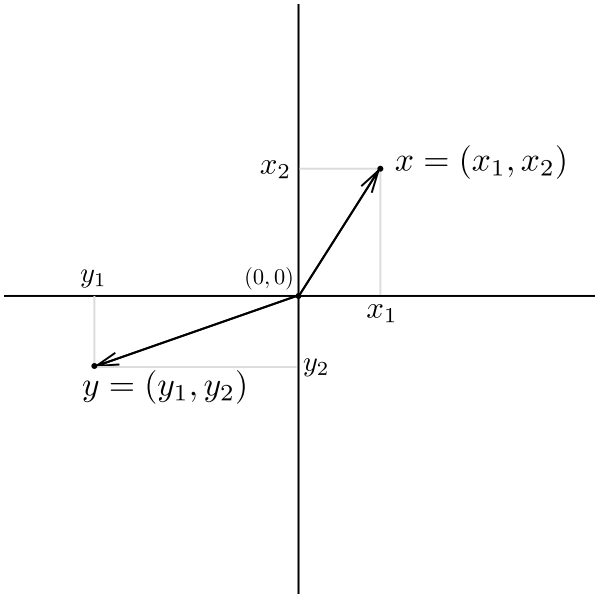
A point in the plane can be *interpreted* as a *displacement*.

Definition

A *plane vector* (or *vector*, *two-dimensional vector*, *2-vector*) is an element of $\mathbf{R}^2$. We associate a list of two numbers with a point in the plane, a *location*. We also associate a list of two numbers with a *displacement*, a *change* in location.

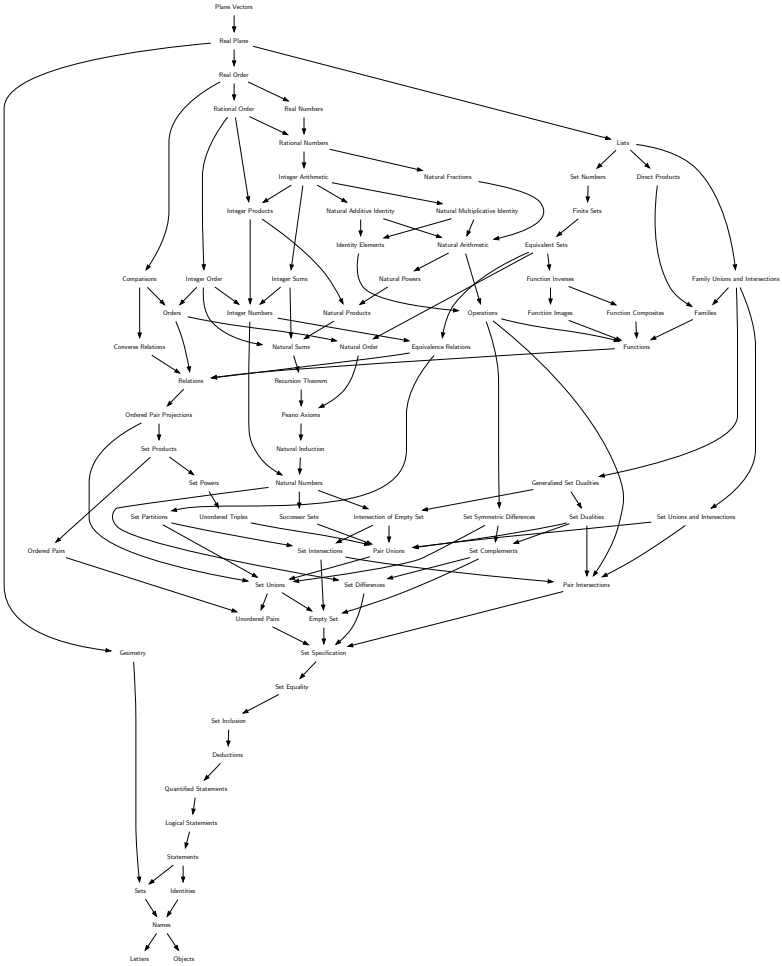
Visualization

As in plane geometry, pictures are indispensable (though they are not proofs). In the figure, indicate the vectors $x, y \in \mathbf{R}^2$ on a plane. We have also indicated the origin, $(0, 0)$, as usual.



Note on terminology

The English word "vector" is from the same Latin word "vector," meaning, literally, carrier. This sense is from the interpretation of a vector as indicating a displacement.


Plane Vectors
Real Plane
Real Order
Rational Order
Real Numbers
Rational Numbers
Lists
Integer Arithmetic
Natural Fractions
Set Numbers
Direct Products
Integer Products
Natural Additive Identity
Natural Multiplicative Identity
Finite Sets
Identity Elements
Natural Arithmetic
Equivalent Sets
Comparisons
Integer Order
Integer Sums
Natural Powers
Function Inverses
Family Unions and Intersections
Orders
Integer Numbers
Natural Products
Operations
Function Images
Function Composites
Families
Converse Relations
Natural Sums
Natural Order
Equivalence Relations
Functions
Relations
Recursion Theorem
Ordered Pair Projections
Peano Axioms
Set Products
Natural Induction
Set Powers
Natural Numbers
Generalized Set Dualities
Set Partitions
Unordered Triples
Successor Sets
Intersection of Empty Set
Set Symmetric Differences
Set Dualities
Set Unions and Intersections
Ordered Pairs
Set Intersections
Pair Unions
Set Complements
Set Unions
Set Differences
Pair Intersections
Unordered Pairs
Empty Set
Geometry
Set Specification
Set Equality
Set Inclusion
Deductions
Quantified Statements
Logical Statements
Statements
Sets
Identities
Names
Letters
Objects