Why

A vector can be viewed as a matrix of height 1 or a matrix of width one.

Canonical Identification

We identify R^n with $\mathsf{R}^{n\times 1}$ in the obvious way. For this reason, we call $x \in \mathsf{R}^n$ (equivalently $x \in \mathsf{R}^{n\times 1}$) a *column vector*.

We write the vector

We could as easily also identify R^n with $\mathsf{R}^{1\times n}$. We avoid this convention. However, by analogy with the language "column vector," we refer to the *matrix* $y \in \mathsf{R}^{1\times n}$ as a *row vector*.

Vectors As Matrices

Real Matrices

Linear Equations

Real Vectors · Linear Functions

N-Dimensional Space · Arrays

Distance

Space Distance

Plane Distance

Interval Length

Intervals

Real Line · Real Plane · Real Space

Integral Line · Real Order · Real Summation · Sequences

Geometry · Rational Order · Real Numbers · Set Numbers · Direct Products

Rational Numbers · Natural Summation

Integer Arithmetic · Finite Sets

Integer Products · Natural Multiplicative Identity · Natural Additive Identity · Equivalent Sets · Family Operations

Integer Sums · Natural Equations · Arithmetic · Integer Order · Comparison · Identity Elements · Algebra · Function Inverses · Family Unions and Intersections

Natural Powers · Integer Numbers · Orders · Equations · Operations · Function Images · Function Composites · Families

Natural Products · Natural Order · Converse Relations · Equivalence Relations · Functions

Natural Sums · Relations

Recursion Theorem

Peano Axioms

Natural Induction · Set Products

Set Powers

Generalized Set Dualities

Natural Numbers · Partitions · Successor Sets · Intersection of Empty Set · Unordered Triples · Set Dualities · Set Unions and Intersections

Ordered Pairs · Set Intersections · Pair Unions · Set Complements

Set Differences · Set Unions · Pair Intersections

Unordered Pairs · Empty Set

Set Specification

Set Inclusion

Standardized Accounts

Accounts

Deductions

Quantified Statements

Logical Statements

Statements

Sets · Identities

Names

Letters · Objects