Why

Matrices that have reflected values across their diagonals arise often.[1]

Definition

A square matrix is *symmetric* (we call it a *symmetric matrix*) if its values do not depend on the order of the indices. In other words, a matrix is symmetric if the value above and below the diagonal are a mirror image.

Notation

Let S be a nonempty set and $A \in S^{n \times n}$. Then A is symmetric if $A_{ij} = A_{ji}$. We denote the set of real-valued n by n symmetric matrices by $\mathbf{S}^n$. A symmetric matrix is the same as its tranpose. In other words, if A is symmetric, $A = A^\top$.

[1] Future editions will clarify.


Symmetric Matrices
Matrix Transpose
Symmetric Real Matrices
Vectors as Matrices
Real Inner Product
Real Matrices
Space Inner Product
Real Norm
Linear Equations
Space Norm
Real Vectors
Linear Functions
Arrays
Plane Inner Product
Plane Norm
N-Dimensional Space
Plane Vector Sums and Differences
Space Vectors
Right Triangle Side Relation
Absolute Value
Distance
Plane Vectors
Real Squares
Space Distance
Real Arithmetic
Plane Distance
Real Multiplicative Inverses
Interval Length
Real Products
Real Space
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Real Addition Inverses
Real Line
Real Plane
Integral Law
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Rational Multiplicative Inverses
Real Sums
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Rational Products
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Integer Arithmetic
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Natural Multiplicative Identity
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Finite Sets
Arithmetic
Identity Elements
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Equivalent Sets
Inverse Elements
Natural Powers
Integer Sums
Integer Order
Natural Equations
Element Functions
Family Operations
Function Inverses
Comparisons
Family Unions and Intersections
Natural Products
Integer Numbers
Order
Equations
Operations
Function Composites
Function Images
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Natural Sums
Equivalence Relations
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Functions
Converse Relations
Recursion Theorem
Relations
Peano Axioms
Ordered Pair Projections
Natural Induction
Set Products
Natural Numbers
Set Powers
Generalized Set Dualities
Set Symmetric Differences
Partitions
Successor Sets
Intersection of Empty Set
Unordered Triples
Set Dualities
Set Unions and Intersections
Set Complements
Ordered Pairs
Set Intersections
Pair Unions
Set Differences
Set Unions
Pair Intersections
Empty Set
Unordered Pairs
Set Specification
Set Equality
Set Inclusion
Deductions
Quantified Statements
Logical Statements
Statements
Sets
Identities
Nouns
Letters
Objects