Definition

Given a square matrix $A \in \mathbf{R}^{n \times n}$.

$$\sum_{\sigma \in S_n} \left(\mathrm{sgn}(\sigma) \prod_{i=1}^{n} a_{i, \sigma_i} \right)$$

We denote the determinant of A by $\det A$.

Real Matrix Determinants

Real Matrices

Real Linear Equations

Arrays — Linear Functions — Real Vectors — Space Vectors

N-Dimensional Space — Plane Vector Sums and Differences

Distance — Plane Vectors

Space Distance

Plane Distance

Interval Length

Intervals — Real Space

Real Line — Real Plane

Permutations — Real Summation — Real Order — Integral Line

Groups — Natural Summation — Real Numbers — Rational Order — Geometry

Rings — Lists — Rational Numbers

Set Numbers — Direct Products — Natural Fractions — Integer Arithmetic

Finite Sets — Natural Additive Identity — Natural Multiplicative Identity — Integer Products

Equivalent Sets — Natural Arithmetic — Identity Elements

Family Unions and Intersections — Function Inverses — Family Operations — Families — Comparisons — Natural Equations — Integer Order — Integer Sums — Natural Powers

Function Composites — Function Images — Operations — Equations — Orders — Integer Numbers — Natural Products

Equivalence Relations — Functions — Converse Relations — Natural Order — Natural Sums

Relations — Recursion Theorem

Ordered Pair Projections — Peano Axioms

Set Products — Natural Induction

Generalized Set Dualities — Set Powers — Natural Numbers

Set Unions and Intersections — Partitions — Intersection of Empty Set — Set Dualities — Unordered Triples — Successor Sets — Set Symmetric Differences

Ordered Pairs — Set Intersections — Pair Unions — Set Complements

Pair Intersections — Set Unions — Set Differences

Unordered Pairs — Empty Set

Set Specification

Set Equality

Set Inclusion

Deductions

Quantified Statements

Logical Statements

Statements

Identities — Sets

Names

Letters — Objects

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