Why

[1]

Definition

Let $A \in \mathbf{R}^{d \times d}$. The determinant of A is

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

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

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[1]Future editions will include, and will probably take the genetic approach via volumes in three-dimensional space.

Matrix Determinants

Real Matrices

Linear Equations

Linear Functions — Real Vectors

N-Dimensional Space — Space Vector — Plane Vector Sums and Differences

Distance — Plane Vectors

Arrays — Space Distance

Plane Distance

Interval Length

Intervals — Real Space

Real Line — Real Plane

Permutations — Real Summation — Real Order — Integral Line

Groups — Rational Order — Real Numbers — Geometry

Rings — Rational Numbers

Integer Arithmetic — Lists

Integer Products — Natural Additive Identity — Natural Multiplicative Identity — Set Numbers — Direct Products

Arithmetic — Identity Elements — Finite Sets

Natural Powers — Equivalent Sets — Natural Summation

Natural Products — Integer Sums — Integer Order — Function Inverses — Comparisons — Family Operations — Family Unions and Intersections

Natural Equations — Equations — Natural Sums — Integer Numbers — Orders — Function Composites — Function Images — Operations — Families

Natural Order — Recursion Theorem — Equivalence Relations — Functions — Converse Relations

Peano Axioms — Relations — Set Products

Natural Induction — Set Powers — Generalized Set Dualities — Set Union and Intersections

Natural Numbers — Set Symmetric Differences — Partitions — Intersection of Empty Set — Successor Sets — Unordered Triples — Set Dualities

Set Complements — Set Intersections — Pair Unions — Ordered Pairs

Set Differences — Set Unions — Pair Intersections

Empty Set — Unordered Pairs

Set Specification

Set Equality

Set Inclusion

Standardized Accounts

Accounts

Deductions

Quantified Statements

Logical Statements

Statements

Identities — Sets

Names

Letters — Objects