REAL BALLS

## 1   Why

[1]

## 2   Definition

Let $x \in \mathbf{R}^d$. The *open ball* centered at $x$ (or around $x$) of radius $\delta > 0$ is the set

$$\left\{ x' \in \mathbf{R}^d \mid d(x, y) < \delta \right\}$$

where $d : \mathbf{R}^d \times \mathbf{R}^d \to \mathbf{R}$ is the usual Euclideand distance.

### Definition

We sometimes denote the open ball by $B(x, \delta)$.

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[1]Future editions will include.

Real Balls

N-Dimensional Space

Distance

Space Distance

Plane Distance

Interval Length

Intervals

Real Line    Real Plane    Real Space

Integral Line    Real Order

Geometry    Real Numbers

Rational Numbers

Integer Arithmetic    Sequences

Natural Additive Identity    Natural Multiplicative Identity    Set Numbers    Direct Products

Arithmetic    Identity Elements    Finite Sets

Integer Products    Natural Powers    Operations    Equivalent Sets

Integer Sums    Natural Products    Function Inverses    Family Unions and Intersections

Integer Numbers    Natural Sums    Function Composites    Function Images    Families

Recursion Theorem    Natural Order    Equivalence Relations    Functions

Peano Axioms    Relations

Natural Induction    Cartesian Products

Natural Numbers    Set Powers    Generalized Set Dualities

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

Set Intersections    Pair Unions    Ordered Pairs    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

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