Why

We want to discuss a function which repeats itself on regular intervals.[1]

Definition

A function $f : \mathbf{R} \to \mathbf{R}$ is *periodic with period* $\alpha \in \mathbf{R}$ if

$$f(x + \alpha) = f(x)$$

for all $x \in \mathbf{R}$. In this case we call f α-*periodic*.

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[1]Future editions will introduce this after the functions sin, cos, etc.

Periodic Functions

Real Arithmetic

Real Multiplicative Inverses

Real Products

Real Order • Real Additive Inverses

Real Sums • Rational Arithmetic • Rational Multiplicative Inverses

Real Numbers • Rational Sums • Rational Products

Rational Numbers

Integer Arithmetic • Inverse Elements

Integer Products • Natural Additive Identity • Natural Multiplicative Identity • Element Functions

Arithmetic • Identity Elements • Algebras • Function Inverses

Natural Exponents • Operations • Function Composites • Function Images

Natural Products • Integer Sums • Functions

Natural Sums • Integer Numbers

Recursion Theorem • Equivalence Relations

Peano Axioms • Relations

Natural Induction • Cartesian Products

Natural Numbers • Set Powers

Successor Sets • Intersection of Empty Set • Unordered Triples • Partitions

Pair Unions • Set Intersections • Ordered Pairs

Set Differences • Set Unions

Pair Intersections • Empty Set • Unordered Pairs

Set Specification

Set Inclusion

Standardized Accounts

Accounts

Deductions

Quantified Statements

Logical Statements

Statements

Identities • Sets

Names

Letters • Objects