Convergence In Measure

Why

convergence in measure form of DCT?

Definition

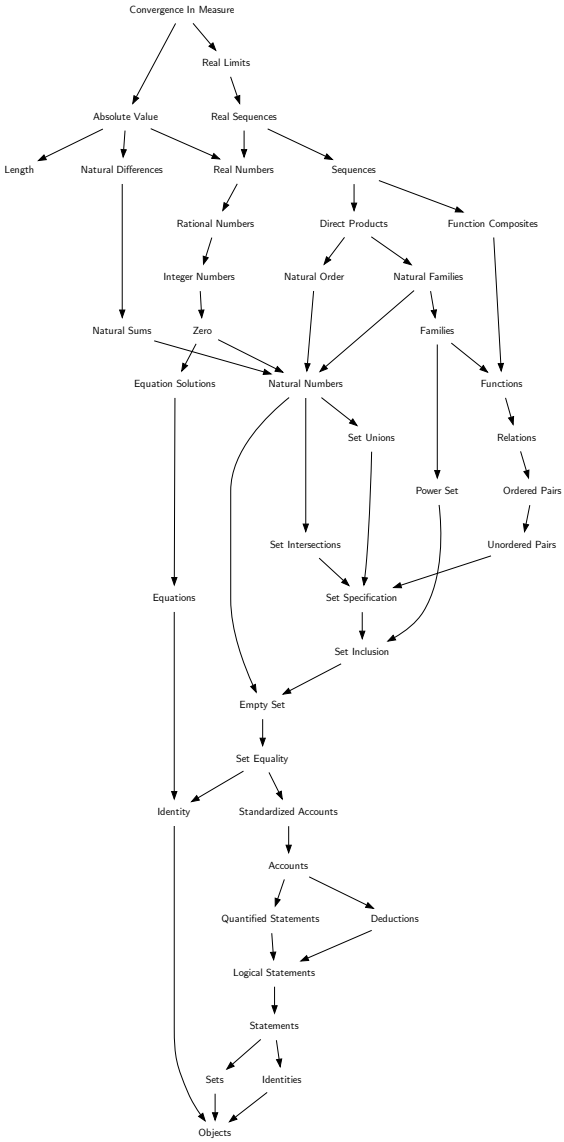
A sequence of real-valued measurable functions *converges in measure* to a real-valued measurable limit function if for every positive number the measures of the set where the function deviates from the limit function by more than the positive number converges to zero.

Notation

Let $(X, \mathcal{A}, \mu)$ be a measure space. Let $(f_n)_n$ a sequence of real-valued measurable functions on X. Let f be a measurable real-valued function on X. If f_n converges in measure to f we write: $f_n \longrightarrow f$ in measure, read aloud as "f n goes to f in measure."

Suppose $f_n \longrightarrow f$ in measure. Then for every $\varepsilon > 0$,

$$\lim_{n\to\infty} \mu(\{x \in X \mid |f_n(x) - f(x)| > \varepsilon\}) = 0.$$


Convergence In Measure
Real Limits
Absolute Value
Real Sequences
Length
Natural Differences
Real Numbers
Sequences
Rational Numbers
Direct Products
Function Composites
Integer Numbers
Natural Order
Natural Families
Natural Sums
Zero
Families
Equation Solutions
Natural Numbers
Functions
Set Unions
Relations
Power Set
Ordered Pairs
Set Intersections
Unordered Pairs
Equations
Set Specification
Set Inclusion
Empty Set
Set Equality
Identity
Standardized Accounts
Accounts
Quantified Statements
Deductions
Logical Statements
Statements
Sets
Identities
Objects