Why

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Definition

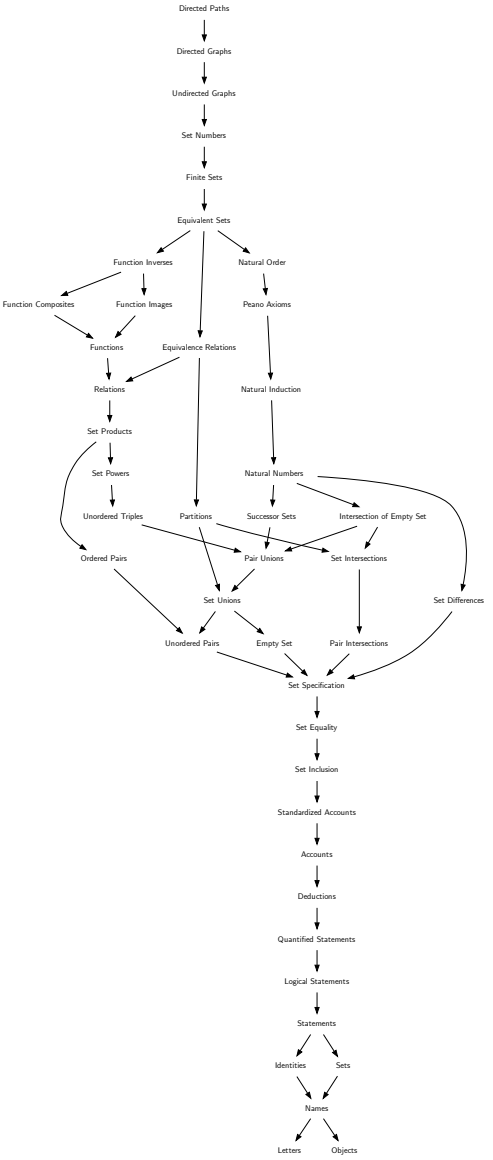
Let (V, E) be a directed graph. A *directed path* between vertex v and vertex $w \neq v$ is a finite sequence of distinct vertices, whose first coordinate is v and whose last coordinate is w, and whose consecutive coordinates (as ordered pairs) are edges in the graph. We say that a path between v and w is from v to w. The *length* of the path is one less than the number of vertices: namely, the number of edges.

Two vertices are *connected* in a graph if there exists at least one path between them. A directed graph is *connected* if there is a path between every pair of vertices. A graph is *acyclic* if none of its paths cycle.

Other Terminology

Some authors allow paths to contain repeated vertices, and call a path with distinct vertices a *simple path*. Similarly, some authors allow a cycle to contain repeated vertices, and call a path with distinct vertices a *simple cycle* or *circuit*. Some authors use the term *loop* instead of *cycle*.

[1] Future editions will include.


Directed Paths
Directed Graphs
Undirected Graphs
Set Numbers
Finite Sets
Equivalent Sets
Function Inverses
Natural Order
Function Composites
Function Images
Peano Axioms
Functions
Equivalence Relations
Relations
Natural Induction
Set Products
Set Powers
Natural Numbers
Unordered Triples
Partitions
Successor Sets
Intersection of Empty Set
Ordered Pairs
Pair Unions
Set Intersections
Set Unions
Set Differences
Unordered Pairs
Empty Set
Pair Intersections
Set Specification
Set Equality
Set Inclusion
Standardized Accounts
Accounts
Deductions
Quantified Statements
Logical Statements
Statements
Identities
Sets
Names
Letters
Objects