Why

1

Definition

Let $a \in \mathbf{Z}$ and let $p \in \mathbf{N}$. Define the first power of a to be a. Define the second power of a to be a^2. Define the pth power of a for $p \geq 2$ to be $a^p = aa^{p-1}$.

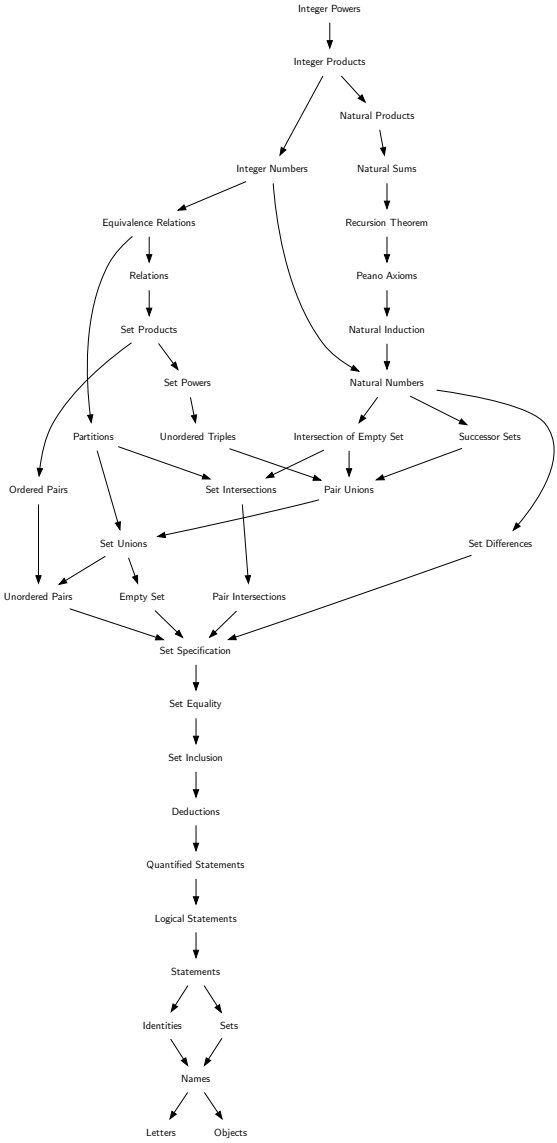
Negative Powers

Let $a \in \mathbf{Z}$ and let $p \in \mathbf{Z}$ with $p < 0$. Then define a^p to be $1/a^{-p}$. Since p is negative, $-p$ is positive and so we have defined a^{-p}.

Zero

Define $a^0 = 1$.

[1] Future editions will include. This sheet include only a very basic outline of a few definitions.


Integer Powers
Integer Products
Natural Products
Integer Numbers
Natural Sums
Equivalence Relations
Recursion Theorem
Relations
Peano Axioms
Set Products
Natural Induction
Set Powers
Natural Numbers
Partitions
Unordered Triples
Intersection of Empty Set
Successor Sets
Ordered Pairs
Set Intersections
Pair Unions
Set Unions
Set Differences
Unordered Pairs
Empty Set
Pair Intersections
Set Specification
Set Equality
Set Inclusion
Deductions
Quantified Statements
Logical Statements
Statements
Identities
Sets
Names
Letters
Objects