Results

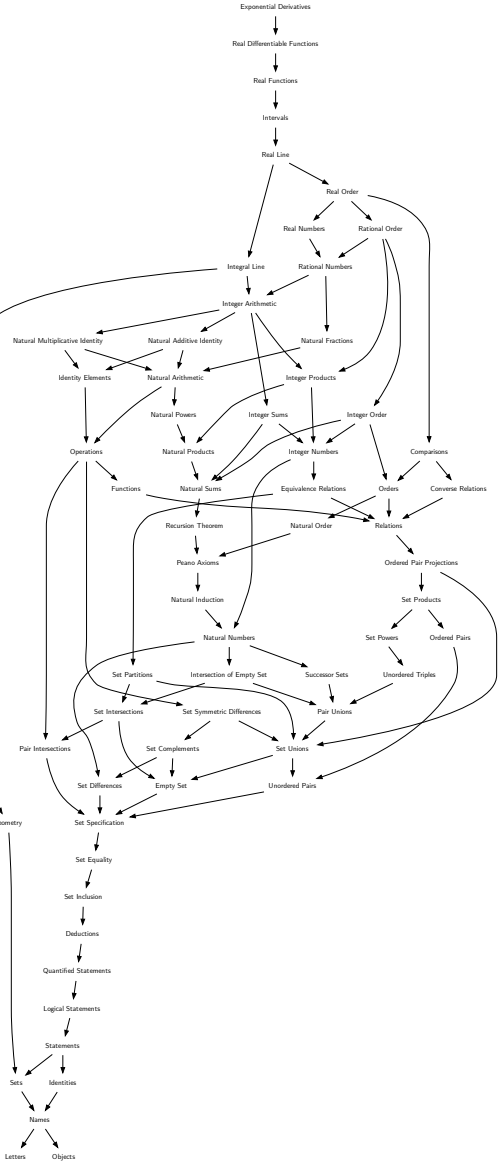
Proposition 1. *Given $a \in \mathbf{R}$, define $f : \mathbf{R} \to \mathbf{R}$ by*

$$f(x) = a^x \quad \textit{for all } x \in \mathbf{R}$$

Then f is differentiable and its derivative is the function $f' : \mathbf{R} \to \mathbf{R}$ defined by

$$f'(x) = \ln(a)a^x \quad \textit{for all } x \in \mathbf{R}$$

This proposition encompasses the special case $f(x) = e^x$ then $f'(x) = e^x$.


Exponential Derivatives
Real Differentiable Functions
Real Functions
Intervals
Real Line
Real Order
Real Numbers
Rational Order
Integral Line
Rational Numbers
Integer Arithmetic
Natural Multiplicative Identity
Natural Additive Identity
Natural Fractions
Identity Elements
Natural Arithmetic
Integer Products
Natural Powers
Integer Sums
Integer Order
Operations
Natural Products
Integer Numbers
Comparisons
Functions
Natural Sums
Equivalence Relations
Orders
Converse Relations
Recursion Theorem
Natural Order
Relations
Peano Axioms
Ordered Pair Projections
Natural Induction
Set Products
Natural Numbers
Set Powers
Ordered Pairs
Set Partitions
Intersection of Empty Set
Successor Sets
Unordered Triples
Set Intersections
Set Symmetric Differences
Pair Unions
Pair Intersections
Set Complements
Set Unions
Set Differences
Empty Set
Unordered Pairs
Geometry
Set Specification
Set Equality
Set Inclusion
Deductions
Quantified Statements
Logical Statements
Statements
Sets
Identities
Names
Letters
Objects