**Why**

We want to visualize function composition.

**Definition**

Let $G$ be a graph (directed or undirected) on $\{1, \ldots, n\}$ and let $A = (A_1, \ldots, A_n)$ be a list of sets. We call the ordered pair $(G, A)$ a *typed graph*. We call $A_i$ the *ith domain*. For $S \subset \{1, \ldots, n\}$, we denote the product $\prod_{s \in S} A_s$ by $A_S$.

If $G$ is directed, we call a source vertex *exogenous* and otherwise we call a vertex *endogenous*.

Let $\bar{G} = (G, A)$ be a typed graph where $G$ is directed. Let $f_i : A_{\mathrm{pa}_i} \to A_i$ for $i = 1, \ldots, n$ so that $f$ is a sequence of functions. We call the ordered pair $(\bar{G}, f)$ a *function graph*[1] (or *function diagram*).

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[1] This sheet is not to be confused with the graph of a function (see Functions).

Typed Graphs

Lists    Directed Graphs

Direct Products    Set Numbers

Finite Sets

Equivalent Sets

Family Unions and Intersections    Natural Order    Function Inverses

Families    Function Images    Function Composites

Equivalence Relations    Functions

Peano Axioms    Relations

Natural Induction    Ordered Pair Projections

Set Products

Generalized Set Dualities    Natural Numbers    Set Powers

Set Unions and Intersections    Set Dualities    Intersection of Empty Set    Successor Sets    Unordered Triples    Partitions

Set Complements    Pair Unions    Set Intersections    Ordered Pairs

Pair Intersections    Set Differences    Set Unions

Empty Set    Unordered Pairs

Set Specification

Set Equality

Set Inclusion

Deductions

Quantified Statements

Logical Statements

Statements

Identities    Sets

Names

Letters    Objects