Subset Systems

1 Why

We speak of a set and a set of its subsets satisfying properties. The utility of this abstract concept is proved by its examples, in future sheets.

2 Definition

A *subset system* is a a pair of sets: the second set contains subsets of the first.

We call the first set the *base set*. If the base set is finite, we call the subset system a *finite subset system*. A *distinguished subset* is an element of the second set. An *undistingished subset* is a subset of the first set which is not distinguished.

2.1 Notation

Let A be a set and $\mathcal{A} \subset 2^A$. We denote the subset system of A and $\mathcal{A}$ by $(A, \mathcal{A})$, read aloud as "A, script A."

3 Example

Example 1. *Let A be a nonempty set. Let $\mathcal{A}$ be 2^A. Then $(A, \mathcal{A})$ is a subset system.*