Introduction

The Bourbaki Project is a collection of documents describing mathematical concepts, terminology, results and notation. Each document is named and labeled with the names of those documents that should be read before it by the unaquainted reader.

Aims. Our primary aim is to understand and develop the mathematical concepts ourselves. Besides this, we have two other goals. First, to provide useful exposition to teach the concepts to an unaquainted reader. And second, to serve as a reference for further work.

Sheets. We call these documents *sheets*. They are only ever two-pages long, and sometimes shorter. They can be printed on the front and back of a single sheet of a paper, hence the name sheet. The decision to cap at two pages is arbitrary. But our experience suggests it is convenient.

Needs. We call the sheets that should be read before a particular sheet X the *needs* of X. For example, the sheet *Relations* needs the sheet *Ordered Pairs*. The reason, in this case, is that the concept of a relation is discussed using the concept of an ordered pair of objects. And since the phrase "ordered pair of objects" makes sense only if we know what is meant by object (discussed in the sheet *Objects*), the sheet *Relations* needs the

sheet *Objects* also. The reader unaquainted with ordered pairs and objects must read (at least) these two sheets before the sheet on relations. So needs order the sheets to be read.

The needs of a sheet are naturally ordered by their respective needs. Suppose X needs both Y and Z, and Y in turn needs Z. In this case, Z ought to be read first, Y second, and X last. We ensure that such an ordering always exists by enforcing the following constraint: if a sheet X needs a sheet Y, then Y can not need X or any sheet that needs X.

For convenience, the needs listed on a page are minimal. That is to say, for sheet X we only list the sheets which are in the needs of X and not needed by any other sheet in the needs of X. If X, Y and Z are as before, then we only list Y as X's needs because Z is implicit (through Y). The sheets and their needs are probably best explored by browsing the project; the index is a reasonable starting point.

Caveats. There are two caveats. First, Bourbaki gives only one path to concepts. Bourbaki is like a map: the landmarks are concepts. Walking is reading. And you must walk along the trails specified by the needs. The point is that the Bourbaki way of structuring the concepts is just one way, and there are many ways, since there are equivalent concepts, alternate proofs, and so on. The second caveat is a wink: these sheets are fiction. They contain only ideas. We have done our best to eliminate all false statements. But very little is said about fitting these puzzle pieces to reality.