

Real Analysis

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See Folland's Real Analysis, definitely a recommended reference.

Possible first day question: how can we “measure” a subset of \mathbb{R} ? We'd like bigger sets to have a higher measure, we wouldn't want removing points to increase the measure, etc. This is not quite possible, at least something that works on *all* subsets of \mathbb{R} . We'll come back to this in a few lectures.

Notions of “smallness” in \mathbb{R}

Definition: Let E be a set, then E is *countable* if it is in a one-to-one correspondence with $E' \subseteq \mathbb{N}$, which includes \emptyset, \mathbb{N} .

Definition: E is *meager* (or of *1st category*)