

Chapter 5. Hahn-Banach Theorem

5.1. Introduction

Note. Quoting from Reed and Simon's *Functional Analysis I* (page 75): “In dealing with Banach spaces, one often needs to construct linear functionals with certain properties. This is usually done in two stages: first one defines the linear functional on a subspace of the Banach space where it is easy to verify the desired properties; second, one appeals to (or proves) a general theorem which says that any such functional can be extended to the whole space while retaining the desired properties. One of the basic tools of the second step in the [Hahn-Banach Theorem].”

Note. Our text gives several versions of the Hahn-Banach Theorem. The first three very closely follow the extension idea mentioned above.

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