

Lineability: An Overview
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ABSTRACT

Let V be a vector space. It sometimes happen that, despite one's intuition, vectors v_0 exist in V that have "strange" properties. Despite the fact that it may well be surprising that a single vector v_0 exists, it often seems to occur that there are many, very many vectors with the "unpleasant" property. Moreover, it is often the case that this set of such unpleasant vectors contains large algebraic structures. If there is an infinite dimensional vector space of such ugly vectors, we call the property *lineable*. Further, it is a *spaceable* property if the infinite dimensional vector space is even complete.

This general, expository talk will have three parts:

- Individual discoveries. (Review of some such "unpleasant" examples)
- Realization that in this context, much of life is unpleasant (i.e. lots of such situations, with lots of algebraic structure)
- Some personal doubts about what is really interesting in this area.