Spanning Sets

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1 Goals

The goals of this activity are:

1. To give students practice with checking if a vector is in the span of a set of vectors.
2. To stress the relationship between the concept of spanning and the various sneaky mathematicians activity.

2 Materials

For this activity you will need:

1. Handouts

3 Instructions

Thing activity will take approximately 45 minutes.

1. Form groups of 3 to 4 students, give students handouts, and explain the goals of the activity.
2. Reiterate the meaning of the words "spanning" and "linear combination" and their relationship to the concepts from the various sneaky mathematicians activity.
3. Give students 30 minutes to think about the problems. As students work on the problems, visit each group to answer any questions they may have.
4. At the end, talk about how they might have observed that the activity is tedious.

4 Tips

1. This activity is a prequel to the introduction to the concept of a basis, i.e., a spanning set with no redundancies. It aims to show students that checking the spanning property can be tedious, and to motivate the alternative characterization of a basis as a set of vectors with no redundancies and size $\dim(V)$.