Source: [[KBe2020math530floIndex]]

#flo

1 | Span

Smallest/largest containing subspaces

- Spans are not the largest vector space that contains the given vectors Pasted image 20200924131215.png
- The span of that vector is a line. It's a subspace. But it's not the biggest, because there's also R^2

Spans tend to be infinite

- Usually a span has infinitely many vectors (unless you're in a weird field (modulo) or have the zero span)
- In the span of just one vector, you can multiply by any scalar which there tends to be infinite of Pasted image 20200924131215.png
- The span of that vector is a line. It's a subspace. But it's not the biggest, because there's also R^2
- It only won't be infinite if your span is the span of () (empty list)

Given a linearly independent set of vectors, would the span equal to the vector space?

- No? It's unclear which vector space is being referred to.

Span of vectors (example 2.6)

- When it's two vectors, you'd expect the span to be a 2d plane unless the vectors are parallel
  - In other words, if they are linear combinations or scalar multiples of one another
  - A linear combination on one other vector is the same as a scalar multiple
  - in 2space they have to not be colinear, in 3space they have to not be coplanar.
  - They have to be linearly independent
- That probably generalizes to higher and lower dimensions

2 | Linear Dependence

- When one of the vectors provides no "new information" aka can be constructed by a linear combination of vectors you already had

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