#flo #hw

---

1 | **Finite-Dimensional Vector Spaces**

```
title: Review
F denotes R or C
V denotes a [[file:KBe20math530refVectorSpace.org][KBe20math530refVectorSpace]] over F
```

- lin alg does not focus on arbitrary vector spaces
- it focuses on finite-dimensional vector spaces!

```
title: learning objectives for the chapter
- span //covered in section
- linear independence //covered in section
- bases
- dimension
```

- **notation**:
  - lists of vectors:
    - (2,1,4),(3,2,5)
      - list len 2 of vectors in R^3
    - n-tuples without surrounding parens
- *linear combination*
  - a linear combination of *x* and *y* would be any expression of the form *ax* + *by*, where *a* and *b* are constants ~wiki
  - multiply each element in a list of vectors by an element in F
  - and then add them up!
  - any relation between the element scalar and what's being multiplied? can the scalars repeat? #question
    - yes, yes they can.
- *span*
  - the set of all linear combos of a list of vectors
    - denoted: span(v1,…,vm)
  - span of empty list is {0}
  - aka. linear span
- KBxSpansLinAlg

```
the span of a list of vectors in V is the smallest subspace of V containing all the vectors in the list
```

```
```ad-question
but don't you get out a single vector at the end..? because you add them? #question no! because it's th
```
```

- *finite-dimensional vector space
  - a vector space is called finite-dimensional if some list of vectors in it spaces the space
    - spans the space..?
    - ????
- linear independence
  - a list of vecors in V where the only choise of a1 … am in F that makes a1v1 + … + amvm = 0 is a1 = … = am = 0
  - uniqe way to get 0?
- lineary dependant
  - opposite, can get to 0 with non-zero scalars
- KBxLinearIndependence

#review the end here #todo some exercises