#flo #hw

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1 | **Finite-Dimensional Vector Spaces**

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

- *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