#flo #hw #inclass

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1 | 3 and 4 sprint!

1.1 | 3.E products and quotients of vec spaces

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title: $v+U$
addition of vec and subspace is just the subset of elements in the parent vecspace where the elements a
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affine subsets can be imagined as parallel, where a subset is shifted over by a vector v.

the quotient space is the set of all affine subsets! it's denoted as $V|U$ which is ofc also a vec space

the quotient map, the map from $V \to V|U$ is denoted as π

$\tilde{T}$ allows for dealing with one dimensionality higher. it let's you propogate the null space across higher dimensions when trying to generalize a linear map.

1.2 | duality!

dual space and dual map

linear functional is a map which goes to the scalar field F. it's a set in $L(V, F)$

dual space, aka V', is the vec space of all linear functionals!

dual basis is the dual of $v_1, \ldots, v_n$ which goes to $\phi_1, \ldots, \phi_n$ is where each ϕ_j is the linear functional which takes v_k to 1 if $k = j$ and 0 else

we also get dual maps, T', which is just the composition of the linear functional and the normal map

ending on, pg 104.

annihilator, denoted as U^0 set of all linear functionals which take all elements to 0 ofc, the annihilator is a subspace