

Re: Linear Algebra Done Right

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On 31 Dez. 2008, 20:56, pwoly...@xxxxxxxxxx wrote:

Hi,

I really enjoyed Sheldon Axler's book "Linear Algebra Done Right". One thing about the book that is a little bit of a drawback is his use of lists of vectors, rather than just considering them as sets. Axler is able to use lists in such a way that he can prove some results quite nicely. My problem with his approach however is that it seems somewhat cumbersome for students to use in writing formal proofs, and Axler never seems to develop a good notation to complement/support it. I am curious if anyone has ever seen an approach similar to that presented by Axler that is a bit cleaner and easier to use in writing formal proofs?

Thanks,

Peter

I assume the lists play a role especially with linear dependency and bases etc.

Doing that with sets instead of lists (aka. families) of vectors would be the wrong thing to do.

For example:

The set(!) of \mathbb{R}^2 vectors $\{(1,0), (t,0)\}$ is linear dependant only if $t \neq 1$.

If $t=1$ it is a singleton set containing a nonzero vector and hence lin. independant!

The corresponding list always has two w'members, eve for $t=1$, and hence it is always lin. dependant.

Similarly, the column vectors of

$\begin{pmatrix} 1 & 2 & 1 \end{pmatrix}$

$\begin{pmatrix} 4 & 1 & 4 \end{pmatrix}$

form a basis of \mathbb{R}^2 (when using sets instead of lists)

whereas the column vectors of

$\begin{pmatrix} 1 & 2 & 1 \end{pmatrix}$

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(4 1 3)
don't.