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It also follows that



The spaces \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ for  are the best examples of vector spaces. We will picture \_\_\_\_\_\_\_\_\_\_\_\_\_\_ for much of our discussion of vector spaces.



***Read Example 3 on page 193***

Discuss whether the set  of polynomials of degree at most *n* is a vector space.

***Read Example 5 on page 194***

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**Note: Every subspace is itself a Vector space.**

The set of just the \_\_\_\_\_\_\_\_ vector in a vector space *V* is a subspace of V called the \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and written \_\_\_\_\_\_\_\_\_.

Discuss that P, set of all polynomials and a subspace of the set of all real-valued functions, and  is a subspace of *P*.

What about a plane not through the origin? Or a line in  not through the origin? Are they Subspaces? (of  and  respectively).

The vector space  is NOT a subspace of , but *H* is. Discuss.





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We call this subspace the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ by 

And for any subspace *H*, we call the set  such that , the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_.

Let H be the set of all vectors of the form where *a* and *b* are arbitrary scalars. Show that *H* is a subspace of 

We can think of the vectors in a spanning set as the “handles” that define a subspace H, and allow us to hold it and work with it.



(This is the same example in the text from 1.3 – now with the context of subspaces.)



