

## 1 | Readings

- Axler 2.A
    - Under "Linear Independence", what is the whole thing about subtracting equations and "if the only way to do this is the obvious way"? pg.32
    - Linear independence feels somewhat okay, but everything past linear dependence lost me.
  - Axler 2.C
    - Under example 2.41, near the end, why can't  $\dim U$  not equal 4? Why must you be able to expand it by at least one element?
      - \* Maybe because there are elements in  $\mathcal{P}_m(\mathbb{R})$  that aren't in  $U$ , so the basis of  $U$  must be a different length from the basis of  $V$  (else  $U$  would equal  $V$  and all elements of  $V$  would be in  $U$  by 2.39)
      - \* We can shove  $f(x) = x$  into the basis of  $U$  and it will still be linearly independent (because  $f$  was not in  $U$ ), so  $\dim U$  must be less than 4.
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