

Source: [KBe2020math530fioIndex](#)

1 | ##exercise 2.A.17

- All polynomials have $(x + 2)$ as a factor, and therefore can be written in the form $(x + 2)f_j(x)$ where $f_j(x)$ has degree at most $m - 1$.
 - Because the z^0, z^1, \dots, z^{m-1} is a spanning list of $P_m - 1(F)$, the spanning list of $P_{m-1}(F)$ is of length m .
 - The original list had $m + 1$ elements, so by Axler 2.23 the list cannot be linearly independent.
 - We can therefore find a non-trivial combination that equals zero, and can thus find a non-trivial combination of the original list
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