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 $z^0, z^1, ..., z^{m-1}$ 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 by multiplying each vector by $(x-2)$.

2 | Elementary Matrices

#incomplete

2.1 | Things you can do

- Multiply a row by a nonzero scalar
- Add two rows
- Switch the ordering of the rows

The matrices that correspond to these operations are what we call #definition elementary matrices.

This includes the identity matrix (multiply by the scalar 1).
