Exercises

E23.33 [1SN] Given $a_0 \ldots a_n \in \mathbb{C}$ constants, with $a_n \neq 0$, and defining $p(x) = a_n x^n + a_{n-1} x^{n-1} + \ldots a_1 x + a_0$, describe all possible solutions f of

$$p(D)f = 0 \,.$$

Show that the solution space is a vector space (based on the field $\mathbb{C}$ of complex numbers) of dimension n.

(Hint. Factorize the polynomial and take advantage of previous exercises.).