



Definition

Suppose \mathbf{F} is a field. A function $p : \mathbf{F} \rightarrow \mathbf{F}$ is called a *polynomial* with coefficients in \mathbf{F} if there exist $a_0, a_1, \dots, a_m \in \mathbf{F}$ (for some $m \in \mathbf{N}$) such that

$$p(z) = a_0 + a_1 z + a_2 z^2 + \cdots + a_m z^m \quad \text{for all } z \in \mathbf{F}$$

The set of all polynomials with coefficients in \mathbf{F} is a subspace of the vector space of all function $\mathbf{F}^{\mathbf{F}}$.

Notation

The set of all polynomials in \mathbf{F} is sometimes denoted by $\mathbf{P}(\mathbf{F})$ or $\mathcal{P}(\mathbf{F})$.

