1. We define
\[ V = \left\{ \sum_{k=0}^{\infty} a_k x^k \mid a_k \in \mathbb{R}, \forall k \in \mathbb{Z} \right\} \]
be the set of all formal power series (in the sense that we don’t consider its convergence). Then \( V \) is a vector space.

Let
\[ V_1 = \{ f \in V \mid \text{the series is absolutely convergent} \} \]

Then \( V_1 \) is a subspace of \( V \).
2. Prove that the functions \( \{e^x, \sin x, \cos x\} \) are linearly independent.

Solution: