



Linear Transformations

1 Definition

An *linear transformation* is a transformation which maps a linear combination of two vectors to a linear combination of the results of those two vectors, with the same coefficients.

1.1 Notation

Let (V_1, F) and (V_2, F) be two vector spaces over the same field. Let $f : V_1 \rightarrow V_2$. f is linear means

$$f(au + bv) = af(u) + bf(v)$$

for all $a, b \in F$ and $u, v \in V_1$.