Linear Transformations

1 Definition

An transformation is *linear* if a linear combination if the result of a linear combination of two vectors in the first space is the linear combination (with the same coefficients) of the result in the second space.

1.1 Notation

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

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

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