



## LINEAR TRANSFORMATIONS

### 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.

### 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  $u, v \in V_1$ .

