



## Functionals

### 1 Why

We name maps from vectors to scalars.

### 2 Definition

A *functional* is a function from vectors to a field. It is natural, and common, for the field of scalars to be the base field.

A real-valued functional is *non-negative* if its range is a subset of the non-negative real numbers. A real-valued functional is *definite* if the only it maps to zero is the zero element of the vector space.

A real-valued functional on a real or complex vector space is *absolutely homogeneous* if the result of a scaled vector is the same as the result of the vector scaled by the absolute value of the scalar.