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linear functional

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Let V be a vector space over a field K . A *linear functional* (or *linear form*) on V is a linear mapping $\phi: V \rightarrow K$, where K is thought of as a one-dimensional vector space over itself.

The collection of all linear functionals on V can be made into a vector space by defining addition and scalar multiplication pointwise; this vector space is called the dual space of V .

The term *linear functional* derives from the case where V is a space of functions (see the entry on <http://planetmath.org/Functionalfunctionals>). Some authors restrict the term to this case.