



## Why

### Definition

A *linear functional* on a vector space  $V$  with field  $k$  is a function  $f : V \rightarrow k$  which satisfies

$$f(\lambda x + \mu y) = \lambda f(x) + \mu f(y)$$

for all  $\lambda, \mu \in k$  and  $x, y \in V$ .

### Examples

1. Define  $F : \mathbf{C}^n \rightarrow \mathbf{C}$  by

$$F(x_1, \dots, x_n) = c_1 x_1 + c_2 x_2 + \dots + c_n x_n$$

where  $c_1, \dots, c_n \in \mathbf{C}$ .

2. Let  $(c_n)_{n \in \mathbf{N}} \in \ell^\infty$ . Define  $F_c : \ell^1 \rightarrow \mathbf{C}$  by

$$F_c((x_n)_{n \in \mathbf{N}}) = \sum_{n=1}^{\infty} c_n x_n$$

.

$\wp(A)$ .



