

CONTINUOUS LINEAR FUNCTIONALS

Why

We can characterize the continuous linear functionals.

Main result

Proposition 1. Let F be a linear functional on a normed space $(V, \|\cdot\|)$. The following are equivalent:

- 1. F is continuous;
- 2. F is continuous at 0;
- 3. $\sup_{\|x\| \le 1} \{ |F(x)| \} < \infty.^1$

For this reason we often call continuous linear functionals the bounded linear functionals or call them continuous bounded linear functionals.

¹Future editions will include an account, and that will fill out this sheet.

