



COMPLEX INNER PRODUCTS

Why

What is an inner product if we take a vector space over the complex numbers.

Definition

An inner produce over a complex vector space is positive definite, Hermitian, and linear in the first argument.

0.1 Alternate Conventions

Notation

Let C be the set of complex numbers. Let (V, C) be a complex vector space. Let $f : V \times V \rightarrow C$ be a function such that

1. $f(x, x) \geq 0$, $f(x, x) = 0 \Leftrightarrow x = 0$;
2. $f(x, y) = \overline{f(y, x)}$
3. $f(ax + by, z) = a f(x, z) + b f(y, z)$

