Inner Product Norms

1 Why

An inner product gives rise to a norm naturally.

2 Definition

Let R be the set of real numbers and C be the set of complex numbers.

Proposition 1. *Let (V, C) be a complex vector space. Let f be an inner product on (V, C). Let $g : V \to R$ such that*

$$g(x) = \sqrt{f(x, x)}.$$

Then g is a norm.

The norm of a vector in an inner product space is the square root of the inner product of the vector with itself.

2.1 Notation