$$\diamondplus$$

Inner Product Norms

1   Why

An inner product gives rise to a norm naturally.

2   Definition

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