Triangle Equality

1 Why

The squared norm of a sum of orthogonal vectors is the sum of their squared norms.

2 Result

Proposition 1. *Let (V, F) be an inner product space with induced norm $|\cdot|$. Let $x, y \in V$ be orthgonal vector. Then*

$$|x + y|^2 = |x|^2 + |y|^2.$$