



# 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 orthogonal vector. Then*

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