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My favorite theorem is the generalized Pythagorean Theorem, stated below.

**Theorem.** Let  $v_1, v_2, \ldots, v_n$  be orthogonal vectors in an inner product space. Then

$$\sum_{i=1}^{n} |v_i|^2 = \left| \sum_{i=1}^{n} v_i \right|^2$$