Polygonal Path Inequality(Minkowsli's Inequality For p=2)

If $a_1, a_2, .., a_n$ and $b_1, b_2, .., b_n$ are positive Integers,Then

$$\sqrt{(\sum_{i=1}^{n} a_i)^2 + (\sum_{i=1}^{n} b_i)^2} \leq \sum_{i=1}^{n} \sqrt{a_i^2 + b_i^2}$$