Definition

The *complex inner product* (or *dot product*, *scalar product*) of two complex vectors $x, y \in \mathbf{C}^n$ is

$$x_1 y_1 + x_2 y_2 + \cdots + x_n y_n$$

We denote the inner product of x and y by $\langle x, y \rangle$.

An *inner product space* is tuple whose first object is a vector space over the real or complex numbers and whose second object is a conforming inner product.

Other terminlogy

Some older authors use the term *pre-Hilbert space*.