

## 1 | dot product

**def**

For  $x, y \in^n$ , the *dot product* of  $x$  and  $y$ , denoted  $x \cdot y$ , is defined by

$$x \cdot y = x_1y_1 + \cdots + x_ny_n$$

where  $x = x_1, \dots, x_n, y = y_1, \dots, y_n$

## 2 | to work with complex vectors, we define the inner product.