1 | norm, $\|x\|$ def

For some $x \in^n$,

$$\|x\| = \sqrt{x_1^2 + \cdots + x_n^2}$$

Using the definition of an inner product, norms can be defined for complex vectors in inner product spaces

For $v \in V$, the *norm* of v, denoted $\|v\|$, is defined by

$$\|v\| = \sqrt{\langle v, v \rangle}$$

2 | properties

2.1 | $\|v\| = 0 \iff v = 0$

2.2 | $\|\lambda v\| = |\lambda| \|v\|$ for all $\lambda \in$

3 | aka euclidean distance

4 | not linear, so we use the dot product to 'inject linearity'