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

For some $x \in {}^n$,

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

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

- $\mathbf{2.1} \mid ||v|| = 0 \iff v = 0$
- 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'