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Basic Linear Algebra

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Norm

ightharpoonup for $x\in \mathbf{R}^n$ we define the (Euclidean) norm as

$$||x|| = \sqrt{x_1^2 + x_2^2 + \dots + x_n^2} = \sqrt{x^{ op}x}$$

- ightharpoonup ||x|| measures length of vector from origin
- ▶ important properties
 - $\blacktriangleright ||\alpha x|| = |\alpha|||x||$
 - ||x + y|| = ||x|| + ||y||
 - $||x|| \geq 0$
 - $||x|| = 0 \iff x = 0$