

PLANE NORM

Why

We want to talk about the size of a displacement.¹

Definition

The *norm* of a vector $x \in \mathbb{R}^2$ is

$$\sqrt{x_1^2 + x_2^2}.$$

Notation

We denote the norm of x by ||x||. In other words, $||\cdot|| : \mathbb{R}^2 \to \mathbb{R}$ is a function from vectors in \mathbb{R}^2 to real numbers. The notation follows the notation of absolute value, the *magnitude* of a real number, and the double verticals remind us that x is a vector. A warning: some authors write |x| for the norm of x when it is understood that $x \in \mathbb{R}^2$.

¹Future editions will complete.

Visualization



