

Definition 11.13. [10C] Given $p \in [1, \infty]$, the norms $\|x\|_p$ are defined on \mathbb{R}^n with

$$\|x\|_p = \begin{cases} \sqrt[p]{\sum_{i=1}^n |x_i|^p} & p \neq \infty \\ \max_{i=1}^n |x_i| & p = \infty \end{cases} \quad (11.14)$$