

Homework 8

1. Let $f : \mathbf{R}^2 \rightarrow \mathbf{R}$ defined by $f(\mathbf{x}) = |x_1|$. True or False? f is a norm.
2. A function $f : \mathbf{R}^n \rightarrow \mathbf{R}$ is convex if for each $\mathbf{x}, \mathbf{y} \in \mathbf{R}^n$ and $0 \leq t \leq 1$ one has $f(t\mathbf{x} + (1-t)\mathbf{y}) \leq tf(\mathbf{x}) + (1-t)f(\mathbf{y})$. True or False? A convex function $f : \mathbf{R} \rightarrow \mathbf{R}$ is continuous.