

Exercises

E14.29 [183] Let $C \subset \mathbb{R}^n$ be a convex set; suppose that $f_i : C \rightarrow \mathbb{R}$ are convex, where $i \in I$ (a non-empty, and arbitrary, family of indices), and we define $f(x) = \sup_{i \in I} f_i(x)$, where we suppose (for simplicity) that $f(x) < \infty$ for every x : show that f is convex.