

MATHEMATICAL ECONOMICS: HOMEWORK # 5

1. Finish the proof of Proposition 3.3 from class (Lemma 5.27 in the Aliprantis-Border handout).
2. Show that the pointwise limit of a sequence of convex functions (all defined on a convex subset C of a n.v.s. V) is a convex function.
3. Supply a proof of Theorem 3.14 from class (using Lemma 3.13).
4. Given m vectors $a^1, a^2, \dots, a^m \in \mathbf{R}^n$, show that the **cone** they generate $K = \{y \in \mathbf{R}^n : y = \sum_{i=1}^m \lambda_i a^i, \exists \lambda_i \geq 0, i = 1, \dots, m\}$ is nonempty, convex and closed.