Advanced Microeconomics - Problem set 3
Due date: November 10th in class

Problem 1 (2pt) *6.C.18 from MGW*

Problem 2 (2pt) *6.C.9 from MGW*

Problem 3 (2pt) *Continue 6.3.9 c). Extend the conclusion to the case in which random date-2 income with cdf F is replaced by cdf G which is riskier than F. In particular show that savings increase, when G replaces F under $v''' > 0$.*

Problem 4 (2pt) *Show that the SEU satisfies independence and monotonicity axiom.*

Theorem 1 (Minkowski (separating hyperplane) Theorem) *Let A, B be two covex sets in $\mathbb{R}^n$ and $A \cap B = \emptyset$. Then there exists $p \in \mathbb{R}^n$, $p \neq 0$ and a number $z \in \mathbb{R}$ such that, $p \cdot x \geq z \geq p \cdot y$ for any $x \in A, y \in B$.*

Problem 5 (2pt) *The missing step in the proof of Theorem 1 in class was the linear utility representation of $\succeq$ on $\mathbb{R}^n$. Apply the above Minkowski thm to establish there exist $p \in R^n, p \neq 0$ such that $x \succ y$ iff $p \cdot x \geq p \cdot y$, i.e. $\succeq$ have linear utility representation. Hint: use properties derived in Lemma 1 in class.*