

## DECISION THEORY: HOMEWORK # 3

1. Show that axioms (NM0) NM1, NM3 and the following property do *not* imply NM2. The property is: For every  $p, q, r \in \mathcal{P}_S$  and every  $\alpha \in [0, 1]$ , if  $p \sim q$  then  $\alpha p \oplus (1 - \alpha)r \sim \alpha q \oplus (1 - \alpha)r$ . (HINT: Let  $p, q$  be (degenerate) lotteries such that for some  $x, y \in X$ ,  $p(x) = q(y) = 1$ . Let the ordering  $\succsim$  be such that  $p \succ q$ .)
2. Solve problem 1 in Chapter 5 of Kreps.
3. Solve problem 4 in chapter 5 of Kreps.
4. Solve problem 5 in Chapter 5 of Kreps.