Econ 204A: Fall 2016

Producer Theory, Consumer Theory, and Decision Theory

Problem Set 7

1. Consider an agent with a VN-M utility function $U(w) = -e^{-w}$. He is offered a gamble that gives him wealth w_1 with probability p and wealth w_2 with probability $1-p$. What amount of sure wealth would make him indifferent to taking the gamble?

2. Let R_1 and R_2 be the i.i.d. random rates of return on two assets (with positive expected values). Assume the agent has only two options: put all his wealth in one asset, or divide it among the two.

   (a) Show that a risk-averse agent (with $u'' < 0$) will always divide her wealth between the 2 assets.

   (b) Show that a risk-loving agent (with $u'' > 0$) will always invest only in one asset.

3. A coin has probability p of landing Heads. You are offered a bet in which you will be paid \$ 2^j if the first head occurs on the jth flip.

   (a) What is the expected value of this bet when $p = 1/2$?

   (b) If your utility function is $u(x) = \ln(x)$, express the utility of this game as a sum.

   (c) Evaluate the sum.

   (d) Let $\overline{w}$ be the amount of money that would give you the same utility as playing the game. Find $\overline{w}$.