

# Recitation #8

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**Question #1** Consider the following game

	L	C	R
U	0,2	3,1	2,3
M	1,4	2,1	4,0
D	2,1	4,4	3,2

Find the NE using ISD (Iterated Elimination of Strictly Dominated Strategies)

**Question #2 (Risk-Lover Version of Q3 in Recitation #7)** Suppose the agent with initial wealth \$2 faces the following gamble. He is expected to lose \$2 with probability  $\frac{1}{4}$ , lose \$1 with probability  $\frac{1}{4}$ , and gain \$2 with probability  $\frac{1}{2}$ . Assume the utility-of-wealth function is  $w^2$

Calculate the expected utility (EU), the Certainty Equivalence (CE), and the amount of money he is willing to get paid for not participating such gamble.

**Question #3 (Insurance)** An individual with initial wealth \$10000 expects a house fire to occur with probability  $q$ , which will cause \$5000 in damages. He can buy as much insurance as he wants at a price of  $p$  per dollar of insurance (so if he buys \$ $I$  of insurance, he must pay a premium of \$ $pI$ , and the insurance company will pay him \$ $I$  if a fire occurs)

Assume that the individual is risk-averse, and has utility-of-wealth  $u(w) = \ln w$

- Write out his expected utility if he purchases \$ $I$  insurance
- Show that if the insurance is fair in the sense that  $p = q$ , then the individual will purchase full insurance.

**Question #4** Consider the following two players game between  $P1$  and  $P2$ : A fair coin will be flipped. If it lands head,  $P1$  gives one dollar to  $P2$ ; if it lands tails,  $P2$  gives \$ $m$  to  $P1$ . Both players start out with \$1, and their utility of wealth functions are  $u_1(w) = w^2$  for  $P1$  and  $u_2(w) = \sqrt{w}$  for  $P2$

- Which of  $P1$ ,  $P2$  is risk-loving, and which is risk-averse
- Write the equation describing the **lowest** amount  $m$  for which  $P1$  will play the game
- Write the equation describing the **highest** amount  $m$  for which  $P2$  will play the game

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