

1) A decision maker's assessed risk tolerance is \$1210. Assume that this individual's preferences can be modeled as an exponential function.

(a) Find $U(\$1000)$, $U(\$800)$, $U(\$0)$, and $U(-\$1250)$.

(b) Find the expected utility for an investment that has the following payoff distribution:

$$P(\$1000) = 0.33$$

$$P(\$800) = 0.21$$

$$P(\$0) = 0.33$$

$$P(-\$1250) = 0.13$$

$$P(\$1000) = 0.33$$

$$P(\$800) = 0.21$$

$$P(\$0) = 0.33$$

$$P(-\$1250) = 0.13$$

(c) Find the certainty equivalent for the investment and the risk premium.

2) You are contemplating two alternative uncertain investments, whose distributions for payoffs are as below in table.

If your preference function is given by $U(x) = 1 - e^{-x/100}$, calculate EU for both C and D. Which would you choose?

	Probabilities	
Payoff	Investment C	Investment D
50	1/3	1/4
100	1/3	1/2
150	1/3	1/4

3) A decision maker faces a risky gamble in which she may obtain one of five outcomes. Label the outcomes A, B, C, D, and E. A is the most preferred, and E is least preferred. She has made the following three assessments.

(a) She is indifferent between having C for sure or a lottery in which she wins A with probability 0.5 or E with probability 0.5.

(b) She is indifferent between having B for sure or a lottery in which she wins A with probability 0.4 or C with probability 0.6.

(c) She is indifferent between these two lotteries:

1: A 50% chance at B and a 50% chance at D

2: A 50% chance at A and a 50% chance at E.

What are $U(A)$, $U(B)$, $U(C)$, $U(D)$, and $U(E)$?

4) Joan's utility function for her asset position x is given by

$$u(x) = x^{1/2}$$

Currently, Joan's assets consist of \$10,000 in cash and a \$90,000 home.

During a given year, there is a .001 chance that Joan's home will be destroyed by fire or other causes.

How much would Joan be willing to pay for an insurance policy that would replace her home if it were destroyed?

5) Suppose a decision maker has the utility function shown in Table. An investment opportunity has EMV \$1236 and expected utility 0.93. Find the certainty equivalent for his investment and the risk premium.

Wealth	Utility Value
2500	1.5
1500	1.24
1000	0.93
600	0.65
400	0.47
0	0.15

6) An investor with assets of \$10,000 has an opportunity to invest \$5000 in a venture that is equally likely to pay either \$15,000 or nothing. The investor's utility function can be described by the logarithmic utility function $U(x) = \ln(x)$, where x is his total wealth.

(a) What should the investor do?

(b) Suppose the investor places a bet with a friend before making the investment decision. The bet is for \$1000; if a fair coin lands heads up, the investor wins \$1000, but if it lands tails up, the investor pays \$1000 to his friend. Only after the bet has been resolved will the investor decide whether or not to invest in the venture. What is an appropriate strategy for the investor? If he wins the bet, should he invest? What if he loses the bet?