

Exercise 3

1. An individual has a Bernoulli utility function $u(x) = \sqrt{x}$ and initial wealth $w = 9$. Let lottery L offer a payoff of 27 with probability $\frac{1}{2}$ and a payoff of (-5) with probability $\frac{1}{2}$.

- (1) Calculate the Arrow-Pratt coefficients of absolute and relative risk aversion of this individual at his initial level of wealth.
- (2) If the individual owns the lottery, what is the minimum price he would sell it for?
- (3) If the individual does not own the lottery yet, what is the maximum price he would buy it?

2. An individual has a Bernoulli utility function $u(x) = \sqrt{x}$. Consider the following two prospects:

$$P1: \begin{cases} 4 \text{ baht with probability } 0.6 \\ 0 \text{ baht with probability } 0.4 \end{cases}$$

$$P2: \begin{cases} 100 \text{ baht with probability } 0.024 \\ 0 \text{ baht with probability } 0.976 \end{cases}$$

- (1) Show that both prospects yield the same expected payoffs.
- (2) Define roughly the concept of *certainty equivalent*, and figure out certainty equivalent of each of the above prospects.
- (3) Show that with Expected Utility Theory, this individual would prefer $P1$ to $P2$.