

Probability & Statistics III (Term 2) - Homework 4

Frank Coolen

(a) Individuals A and B each have current fortune zero and have utilities for money of the form

$$U_A(\mathcal{L}x) = x^\alpha, \quad U_B(\mathcal{L}x) = x^\beta,$$

respectively, where $\alpha < \beta$. Discuss and compare the attitudes to risk of A and B .

(b) Suppose that A and B each have current fortune zero and have the same utility function for money, namely

$$U(\mathcal{L}x) = x^{1/3}.$$

Suppose that A receives as a gift a lottery ticket which yields a reward $\mathcal{L}r$ ($r > 0$), with probability $1/2$, and a reward of nothing with probability $1/2$. Find all values $\mathcal{L}b$ with the property that B is prepared to buy the lottery ticket from A for $\mathcal{L}b$, and A is prepared to sell the ticket to B for $\mathcal{L}b$ (i.e. so that the sale is considered advantageous by both parties).