Tutorial 9. *Auctions.*

Question 1. Suppose a variable V is uniformly distributed between zero and one. What is the probability that a V drawn from this distribution will be smaller than 0.7? If we draw two V's from this distribution, what is the probability that both will be smaller than 0.7? What is the probability that three V's drawn from the distribution will be smaller than 0.7?

Problem 1. There are three buyers, interested in a private value object. Their names are Alfred, Ben, and Chloe. Their actual valuations are $V_A = 0.8$, $V_B = 0.3$, and $V_C = 0.5$. All three know that the valuations are independent and are drawn from a uniform distribution between zero and 1.

    a) Describe optimal bidding strategies in an English auction. What will be the outcome?

    b) What will be the outcome of a second-price sealed-bid auction?

    c) Find symmetric linear Baysian-Nash equilibrium of a first-price sealed-bid auction in which all buyers bid a fixed proportion α of their true valuations.

    d) What will be the outcome of a Dutch auction?

Problem 2. A seller has an object and he knows that there are five buyers interested in the object. The valuations are uniformly distributed on $[0; 1]$. Buyers' valuations are private information. What auction format would you recommend to use? *(Hint: compare expected revenue from all four standard auctions.)*