

Homework-19

A product is sold through an online auction house that charges c per hour as rent. The item is sold to the first customer offering a price that is same or above a pre-decided threshold price. On an average, λ customers bid for the product every hour, and each bid is equally likely to be in between a and b . A customer is unaware of the threshold price and the other bids. With suitable assumptions, formulate an optimization problem to determine the threshold price so that the expected profit (i.e., the accepted bid less rent) is maximized.

Hint: If the threshold price is p , then the customer who gets the product pays $B|B \geq p$, where B denotes a random bid. If it takes τ amount of time for the first customer to bid p or more, then the expected profit is $E[B|B \geq p] - cE[\tau]$. You need to find these expectations.