

2003년 가을호  
김종빈 교수 Quizzes and Communications  
[Question 2003 X. 2]의 답

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## The Proposer's Own Answer

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**Answer.** For  $B$ , the question is how to guess  $A$ 's entry preventing price.  $B$  conservatively surmises : if  $A$  is timid, he will set his price at his average cost plus the "normal profit"; if  $A$  is audacious, he will set his price most likely at the highest value of his average cost plus the "normal profit" (= \$25), but his price can be exorbitant even on average. Is  $A$  timid or audacious?  $B$  has no idea, and hence  $A$ 's timidity and audacity each receives the probability of  $\frac{1}{2}$ .

Let  $X$  be  $A$ 's price.

$$\begin{aligned} \text{Then } f(x) &= \frac{1}{5}, & 20 < x < 25 \\ &= 0, & \text{otherwise ;} \end{aligned}$$

As  $B$  is very much conservative,  $25 < X$ , and  $E(X) \rightarrow \infty$ , and hence

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$$f(x) = \frac{25}{x^2}, \quad x > 25$$
$$= 0, \quad \textit{otherwise.}$$

$$\text{Hence, } P(X < 28) = \frac{1}{2} \int_{20}^{25} \frac{1}{5} dx + \frac{1}{2} \int_{25}^{28} \frac{25}{x^2} dx$$
$$= 0.5357.$$