Quiz for Week 4

ⓘ This is a preview of the published version of the quiz

Started: 2 Oct at 23:51

Quiz instructions

Quiz time is from 17.15 to 18.00 of September 06, 2023.

Question 1 — 1 pts

Let X be a random variable. Which of the following is **INCORRECT**?

- ○ If X is a **continuous** random variable and x_1, x_2, x_3, x_4 are arbitrary real numbers, we must have
$$P(X = x_1, \text{ or } X = x_2, \text{ or } X = x_3, \text{ or } X = x_4) = 0.$$
- ○ If X is a **discrete** random variable, then, we must be able to find a real number x, such that $P(X = x) \neq 0$.
- ○ If X is a **discrete** random variable, then, we must be able to find a real number x, such that $P(X = x) = 0$
- ◉ None of the given options

Question 2 — 1 pts

Which of the following can serve as the cumulatively distribution function of a random variable X?

- ◉ $$F(x) = \begin{cases} 0, & x < 0 \\ 1/3, & 0 \leq x < 2 \\ 5/6, & 2 \leq x < 5 \\ 1, & 5 \leq x \end{cases}$$

- $F(x) = \begin{cases} 0, & x < 0 \\ 1/3, & 0 \leq x < 2 \\ 2/3, & 2 \leq x < 5 \\ 1/3, & 5 \leq x \end{cases}$
- $F(x) = \begin{cases} 0, & x \leq 0 \\ 1/3, & 0 < x \leq 2 \\ 5/6, & 2 < x \leq 5 \\ 1, & 5 < x \end{cases}$
- $F(x) = \begin{cases} 1/3, & x = 0 \\ 5/6, & x = 2 \\ 1, & x = 5 \end{cases}$

  and $F(x) = 0$, elsewhere.

Question 3

1 pts

Which of the following $f(x)$ can serve as the probability function of a random variable X?

- $f(x) = \begin{cases} 3x^2 & -1 \leq x \leq 1 \\ 0 & \text{elsewhere} \end{cases}$
- $f(x) = \begin{cases} 1 - 1.5x^2 & -1 \leq x \leq 1 \\ 0 & \text{elsewhere} \end{cases}$
- $f(x) = \begin{cases} 2x^2 & 0 \leq x \leq 1 \\ 0 & \text{elsewhere} \end{cases}$
- (selected) $f(x) = \begin{cases} 3x^2 & 0 \leq x \leq 1 \\ 0 & \text{elsewhere} \end{cases}$

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