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Courses » Advanced Topics in Probability and Random Processes

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Unit 2 - Week 1: Introduction to probability and Random Variable

Course outline

How to access the portal

Week 1: Introduction to probability and Random Variable

- Probability Basics
- Random Variable-I
- Random Variable-II
- Quiz : Assignment 1

Week 2: Random process basics and infinite sequence of events

Week 3: Convergence of Sequence of Random Variables

Week 4: Applications of Convergence Theory

Week 5: Markov

Assignment 1

The due date for submitting this assignment has passed.
 As per our records you have not submitted this **Due on 2018-08-22, 23:59 IST.**
 assignment.

1) Suppose $S = \{0, 1, 2\}$. Which of the following collections are fields ? 1 point

- $\{S, \Phi\}$
- $\{\{0\}, \{1\}, \{2\}, S, \Phi\}$
- $\{\{0\}, \{1, 2\}, S, \Phi\}$

No, the answer is incorrect.
Score: 0

Accepted Answers:
 $\{\{0\}, \{1, 2\}, S, \Phi\}$

2) Consider the sequence of subsets in \mathbb{R} given by 1 point

$$A_n = \left(1, 2 + \frac{1}{n}\right). \text{ Find } \bigcup_{n=1}^3 A_n, \bigcap_{n=1}^3 A_n, \bigcup_{n=1}^{\infty} A_n \text{ and } \bigcap_{n=1}^{\infty} A_n \text{ respectively}$$

- $(1, 3), (1, \frac{7}{3}), (1, 3)$ and $(1, 2]$
- $(1, 3], (1, \frac{7}{3}), (1, 3)$ and $(1, 2]$
- $(1, 3], (1, \frac{7}{3}), (1, 3]$ and $(1, 2]$
- $(1, 3), (1, \frac{7}{3}), (1, 3)$ and $(1, 2)$

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Continuous
Time Markov
Chain

Week 8:
Martingale
Process

New Unit

Assignment
Solutions

Find $P(A \cup B)$, $P(A \cup B \cup C)$ and $P(A \cap B \cap C^c)$ respectively.

$$\frac{1}{8}, \frac{3}{4}, \frac{7}{8}$$

$$\frac{3}{4}, \frac{7}{8}, \frac{1}{8}$$

$$\frac{7}{8}, \frac{3}{4}, \frac{1}{8}$$

$$\frac{7}{8}, \frac{1}{8}, \frac{3}{4}$$

No, the answer is incorrect.

Score: 0

Accepted Answers:

$$\frac{3}{4}, \frac{7}{8}, \frac{1}{8}$$

4) Consider a probability space (S, \mathbb{F}, P) and an event $B \in \mathbb{F}$. 0 points

Suppose A_1, A_2 and A_3 are disjoint events such that $A_1 \cup A_2 \cup A_3 = S$.

If $P(A_1 \cap B) = P(A_2 \cap B) = P(A_3 \cap B) = \frac{1}{4}$ and $P(A_1) = P(A_2) = \frac{1}{3}$,

find $P(B)$, $P(A_2/B)$ and $P(B/A_3)$ respectively.

$$\frac{1}{4}, \frac{1}{3}, \frac{3}{4}$$

$$\frac{3}{4}, \frac{1}{3}, \frac{1}{4}$$

$$\frac{1}{4}, \frac{3}{4}, \frac{1}{3}$$

$$\frac{1}{3}, \frac{1}{4}, \frac{3}{4}$$

No, the answer is incorrect.

Score: 0

Accepted Answers:

$$\frac{1}{4}, \frac{1}{3}, \frac{3}{4}$$

You were allowed to submit this assignment only once.

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