



Bookmarks



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Lec. 1: Probability models and axioms

Exercises 1 due Feb 10, 2016 at 23:59 UTC

Mathematical background: Sets; sequences, limits, and series; (un)countable sets.

Solved problems

Problem Set 1

Problem Set 1 due Feb 10, 2016 at 23:59 UTC

Unit 1: Probability models and axioms > Problem Set 1 > Problem 5 Vertical: Probabilities on a continuous sample space

PROBLEM 5: PROBABILITIES ON A CONTINUOUS SAMPLE SPACE

(6/6 points)

Alice and Bob each choose at random a real number between zero and one. We assume that the pair of numbers is chosen according to the uniform probability law on the unit square, so that the probability of an event is equal to its area.

We define the following events:

 $A = \{\text{The magnitude of the difference of the two numbers is greater than } 1/3\}$
 $B = \{\text{At least one of the numbers is greater than } 1/4\}$
 $C = \{\text{The sum of the two numbers is } 1\}$
 $D = \{\text{Alice's number is greater than } 1/4\}$

Find the following probabilities:

1.

 $P(A) =$

0.4444444



2.

 $P(B) =$

0.9375



3.

 $P(A \cap B) =$

0.4444444



4.

 $P(C) =$

0



5.

 $P(D) =$

0.75



6.

 $P(A \cap D) =$

0.3090278



You have used 2 of 2 submissions

DISCUSSION

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