

CS 2800: Discrete Structures

Homework 10

Due Monday, November 12, 2012

Please write your netid in sufficiently large font on the upper right corner of all pages. Grading for all problems will be based on neatness, style, and correctness.

1. Let n be a positive integer. In how many ways can one assign nonnegative integers to $i_1, i_2, \dots, i_k$ such that $\sum_{j=1}^k i_j = n$?
2. Find a closed form expression for the summation $\sum_{i=1}^{\infty} ia^i$.
3. Given the events A and B with probabilities

	A	$\overline{A}$
B	$\frac{1}{8}$	$\frac{1}{4}$
$\overline{B}$	$\frac{1}{4}$	$\frac{3}{8}$

What is $\text{Prob}(A)$, $\text{Prob}(B)$, $\text{Prob}(A \cap B)$, $\text{Prob}(A|B)$?

4. Construct the probability table for three events A , B , and C where no entry in the table is zero and the events are pairwise independent but not fully independent.
5. Construct the probability table for four events A , B , C , and D where the events are pairwise independent but not fully independent.