Discrete Structures. CSCI-150. Fall 2015.

Homework 15. Due Wed. Dec 14, 2015.

Problem 1 (Graded)

You have 10 books on your bookshelf. They are arranged in the order of increasing number of pages (from the thinnest to the thickest):

5 pages, 10 pages, 20 pages, 40 pages, 80 pages, ... 2560 pages

(so, every subsequent book is twice as thick as the previous).

Your grandmother left an important note on one of the pages of those books, but you don't know the book and the page.

(a) Assuming she could choose any page with equal probability, what is the probability that the note is in the book #4?

(b) What's the probability that the note is in one of the thinner books (#1 – #5)?

(c) In one the the thicker books (#6 – #10)?

Problem 2 (Graded)

Given a complete bipartite graph $K_{n,m}$, you paint its nodes **black** or **white** choosing both colors with equal probability.

Find the probability that the result is a correct node coloring (that is, no two adjacent nodes have the same color).

Problem 3

You roll a 6-sided die and a 20-sided die. Find the probability that the number on the 6-sided is greater than on the 20-sided.