Math 331 – Fall 2009

Homework 11

Due: Thursday, December 3, 2009, beginning of the class

Please read the instructions/suggestions written in the syllabus!
All problems are from the 3rd edition of the textbook.
(Ghahramani: Fundamentals of Probability)

- Hand in the following problems:
  - *Page 433-434:* 1, 5, 6
  - *Page 465-466:* 1, 8, 9, 10, 12, 17
- Practice problems (you do not need to hand these in!):
  - *Page 433-434:* 3, 4
  - *Page 465-466:* 7, 11, 13, 14, 16,
- Bonus problem:

  If we roll two (regular) dice then the probability mass function of the sum is given by

  $$p(x) = \frac{6 - |7 - x|}{36}, \qquad x = 2, 3, \ldots, 11, 12.$$

  We want to write integers on the faces of two (fair) dice in a way that the individual dice are not the usual ones (i.e. with numbers 1,2,3,4,5,6), but their sum behaves the same way as usual (i.e. the probability mass function of the sum is given by $p(x)$.) The two dice do not have to be the same.

  Show that this is possible, and give the list of numbers we should use for the two dice.

Disclaimer: It is easy to find the solutions to (some of) these questions. (E.g. the internet, your fellow classmates ...) However, do NOT consult any of these solutions when working on this assignment or you will learn nothing from it and your chance of passing the course will be greatly diminished. If it becomes apparent to the grader that your solution is copied from existing solutions, you will be assigned a grade of zero for lack of originality.

Reminder: The make-up exam will take place on December 2, Wednesday at 1pm (room TBA). It will cover everything we discussed in class up to Section 10.2.