

Probability (MATH 4733 - 01) Fall 2011

Homework 5

Due: Wed. Oct. 5, start of class

Instructions: Please read the homework policies and guidelines posted on the course webpage. You may **not** use a calculator (or computer). Make sure to write your name and course number in the top right corner of your solution set, as well as the assignment number on top. Please staple your homework. Sections and exercises refer to the exercises in the required course text.

Reading

Review your exam, and Section 3.2.

Written Assignment

Total: 100 points. Each problem is worth 10 points unless otherwise noted.

Section 3.2: 7, 9, 14, 21, 22, 26

Problem A. (40 pts) Having been bested by Michael Phelps at the last poker tournament, you resign yourself to a simple basement game of 5-card draw with Herman Cain. Here you are dealt 5 cards face down. You get a 3 of hearts, 5 of hearts, 6 of clubs, 6 of spades and a jack of hearts. You are allowed to discard up to 3 cards you like and are dealt that many new cards in return. You are allowed to do this once.

- (i) If you discard the 3, the 5 and the jack, what are your odds of getting two pairs? Three of a kind?
- (ii) If you discard the club and the spade, what are your odds of getting a flush?
- (iii) If you discard one 6 and a jack, what are your odds of getting a straight?
- (iv) What are Herman's odds of having 2, 3 or 4 of a kind in the hand he is first dealt (knowing what you are dealt)?
- (v) (**Bonus**) Suppose Herman has an ace of spaces and a king of diamonds in his first hand, and he discards his other cards (say 2 of hearts, 4 of diamonds and 9 of clubs). Given both your first hand and his, what is the probability he beats a pair of sixes?

For Problem A, you can use a calculator (only $+$, $-$, \times , and \div) to simplify your answers.