

Mathematics 375 – Probability and Statistics 1
Information on Exam 1
September 30, 2003

General Information

As announced in the course syllabus, the first midterm exam will be given next week, either in class Friday, October 10, or Thursday evening October 9 if the class prefers. The exam will cover the material we have discussed since the beginning of the semester, up to and including the material on geometric discrete random variables from class on Wednesday, October 1 (this is the same as the material from Problem Sets 1 - 4). In more detail, the topics to be covered are:

- 1) Descriptive statistics such as the mean, standard deviation, and frequency histograms for numerical data, the “empirical rule”
- 2) Discrete sample spaces and counting techniques for sample points – the $m \cdot n$ rule, permutations, binomial and multinomial coefficients
- 3) The “Sample Point Method” for probabilities
- 4) Conditional probability and independence of events
- 5) The Law of Total Probability and Bayes’ Rule – *know the proofs of these* and how to apply them.
- 6) The “Event Composition Method” for probabilities
- 7) Discrete random variables, probability distribution functions, expected value, variance – *know the proof of the equation $V(Y) = E(Y^2) - (E(Y))^2$ as well as how to apply it.*
- 8) Binomial and geometric random variables – *know the proof of the formula $E(Y) = np$ for a binomial random variable based on n trials with success probability p , and the formulas for variance of binomial random variables, plus expected value and variance of geometric random variables.*

Other Groundrules

You may prepare *one side of a 3 × 5 inch index card* with formulas and any other information you want to include, bring it to the exam and consult it at any time. I will provide copies of the tables for binomial random variables from the text. Calculators allowed.

Review Session

I will be happy to run a pre-exam review session if there is interest. The evening of Wednesday, October 8 would be convenient, but other times are possible too.

Suggested Review Problems

From the text: 1.22, 1.25, 1.33, 2.122, 2.123, 2.124, 2.127, 2.129, 2.131, 2.132, 2.137, 2.144, 2.145, 3.15, 3.33, 3.53, 3.56, 3.61, 3.144