

Stat/Math 414.1 Spring 2008

Review for Midterm 1

Our first midterm will be given on Friday, February 15th. It will be an in-class exam, closed book and closed notes. You are allowed to bring your CALCULATOR and ONE, 8.5 x 11 (letter size) double-sided formula sheet with only handwritings on it.

The exam will include 4-6 problems close to the homework ones and/or the examples studied in the class. In order to get full credit, You are required to show your work, not just give the numerical answer.

1. Concepts of sample, population, experiment, outcome, sample space, event, probability, etc.
2. Measures of location and variability for a quantitative sample data set. Know how to calculate sample mean, sample variance and sample standard deviation.
3. Set operations, DeMorgan's Laws, Venn diagram(how to use it to calculate probabilities for events), the ability to use set notations to represent events. Axioms of probability. Properties of probability.
4. Using counting techniques to calculate probabilities for equally likely outcome events. When to use Addition rule? When to use Product rule? Know how to use Permutation (order matters), Combination (order does not matter) and $\binom{n}{n_1 n_2 \cdots n_k}$ (divide n objects into k distinct and labeled groups) to count numbers.
5. Understand conditional probability. Independent events (How to check independence?) Do not confuse independent with disjoint.
6. The Multiplicative Law of Probability (also the special case for independent events). The Additive Law of Probability (also the special case for disjoint events).
7. Know how to apply the Law of Total Probability and Bayes' Rule.