

# EXAM 1 REVIEW

Math 262, Spring 2017

Exam 1 will occur in class on Monday, March 6. The exam will test your knowledge of concepts, definitions, and theorems, as well as your ability to solve simple problems involving counting and probability, from Sections 1.1 through 1.5 and 2.1 through 2.3 in the textbook. Books, notes, and internet-capable devices will not be permitted during the exam. Calculators will be allowed, but probably not very useful.

## Concepts and Theorems

*You should be able to define, illustrate, use, and briefly summarize the following:*

- sample space
- event
- probability (definition, 3 axioms)
- inclusion-exclusion principle
- fundamental counting principle
- combination
- permutation
- selection with or without replacement
- counting when order does or does not matter
- conditional probability
- independent events
- law of total probability
- Bayes' rule
- random variable (rv)
- discrete random variable
- probability distribution
- probability mass function (pmf)
- cumulative distribution function (cdf)
- expected value, mean
- variance, standard deviation
- Chebyshev's inequality
- Bernoulli random variable

## Problems to Review

*Consider the following problems for practice, especially those printed in **bold**.*

- Section 1.7: #121 – 127, 129, **131**, 132, 134, 135, **136**, 141, 142, **143**, 146 – 148 (pages 73 – 80)
- Section 2.1: #1, 2, 8, **9** (pages 85 – 86)
- Section 2.2: #**11**, 12, 14, 15, **17**, 19, 21, **23**, 25, 27 (pages 96 – 100)
- Section 2.3: #30, 31, **38**, **39**, 40, 45 (pages 111 – 116)
- Section 2.9: #142, **143** (pages 171 – 175)
- All problems assigned in the homework (solutions on the course web site).