

MTH 140: Study Guide for Exam 3



Instructions: Exam 3 is going to contain a mix of free response questions, fill in the blank and multiple choice questions. It will be on **Thursday, November 21st during class time**. You will be allowed to use your own filled in notes and your calculator.

In preparation for the exam, you may wish to do the following:

- Review the concepts learned in each section and as you go, **make a summary, formula sheet**. This will help you have all the things you need to remember in one place so you don't have to flip through your notes.
- Review the exercises used as examples during the lectures and in homeworks.
- Go over this Study Guide and make sure all the concepts/formulas look familiar and you know when/how to use them.
- Finally, after you have studied, take the practice exam. This assignment is not required. It is there for you to use as practice after you have studied. Do not use the Practice as your only preparation for the Exam; use it as a study tool.

Exam 3 will cover some of Chapter 3, Chapter 4 and some of Chapter 5.

1. Chapter 3 Probability - Days 15, 16, 17

- Know how to apply the Fundamental Principle of counting
- Know how/when to apply permutations/combination formulas
- Discrete random variables: what they are and how to find probabilities and mean(expected value).
- Rules of probability distributions.
- Know the notation for mean(expected value) for a discrete random variable X .
- Know the four conditions that an experiment needs to satisfy to be a binomial experiment.
- What the notation $X \sim B(n, p)$ means.
- Know the formulas for binomial probabilities and when each one of them is used.
- Know the formulas and notation for the mean(expected value) of a binomial random variable.

2. Chapter 4 Sets - Days 18 and 19

- Know definition of a set and notations involving sets: belongs to set, does not belong to set, cardinality, empty set, natural numbers, integers, etc.
- Know set operations and notations: complement, union, intersection, set difference, subset
- Know how to use Venn Diagrams with 2 and 3 sets to solve problems

3. Chapter 4 Logic - Negation, Conjunction and disjunction: Days 20 and 21

- Know definition of a statement and not statements
- Know what quantified statements are (universal and existential)
- Know how to negate statements
- Know what conjunction is and its truth table
- Know what disjunction is and its truth value
- Know how to make truth tables for compound statements involving, not, and and or.
- Know what a tautology is and what a contradiction is.