

Exam 1 will be on Friday 6 February during our regular class time. So you will have one hour to complete the exam. Notes, books and other aids are not allowed.

Chapter 1: Sets

Section 1

- Terms to know: element of a set, cardinality of a set, set builder notation, natural numbers, integers, rational numbers, real numbers, interval notation
- Symbols to know $\mathbb{N}, \mathbb{Z}, \mathbb{Q}, \mathbb{R}, \in$ and basic set notation
- You should know how to go back and forth between different kinds of set notation.

Section 2

- terms to know: ordered pair, Cartesian product, ordered n -tuple
- symbols to know: $A \times B$
- You should know how to count the number of elements in $A \times B$ provided A and B are finite.
- Know how to sketch $A \times B \subseteq \mathbb{R} \times \mathbb{R}$

Sections 3 and 4

- terms to know: subset, the power set of a set
- symbols to know: $\subseteq, \mathcal{P}(A)$
- Know how to distinguish between $A \in B$ or $A \subseteq B$.
- Know how to determine the cardinality of the power set of a finite set.

Sections 5 and 6

- Know how to find the union, intersection, and difference of two sets.
- symbols to know: $\cup, \cap, -$ and \bar{A} .
- Know how to find the complement of a set.

Section 7

- Know how to draw and to read a Venn diagram.

Section 8

- terms to know: indexed sets
- notation to know: $\bigcup_{i \in I} A_i, \bigcap_{i \in I} A_i$

Chapter 2: Logic

- terms to know: statement, the mathematical meaning of **and**, **or** and **not**, truth table, conditional statement, biconditional, quantifiers
- symbols to know: $\vee, \wedge, \sim, \Leftarrow, \Leftrightarrow, \forall, \exists$
- You need to be familiar with **alternate** formulations of these logical statements in English. (See especially the bottom of page 44.) You should be able to go back and forth between a compound statement in English and one in symbolic logic.
- Know how to decide if a statement with **and**, **or** or **not** is true or false.
- Know how to decide if a conditional, biconditional, or quantified statement is true or false.
- Know how to determine if two statements are logically equivalent or not.
- Know DeMorgan's Laws (page 51).
- Know how to determine if an argument is or is not valid.