Math 102
Exam 2 Review Sheet

Section 2.2: Statements, Connectives and Quantifiers

Key Topics:
• Know the definition of a statement, and the difference between simple and compound statements.
• Be able to determine whether or not an English sentence is logical statement.
• Know the symbols for and meanings of the 5 basic logical operations.
• Be able to translate from English statements to logical symbols.
• Be able to translate from logical symbols into written English.
• Know the difference between universal and existential quantifiers.
• Be able to negate logical statements, including those with universal and existential quantifiers.

Sections 2.3 and 2.4: Truth Tables

Key Topics:
• Memorize the truth tables for the 5 logical connectives.
• Know the difference between "inclusive or" and "exclusive or"
• Know the number or rows in the truth table of a logical expression with given number of variables.
• Be able to build the truth table for a logical expression.
• Know the definition of logical equivalence for two logical statements.
• Be able to use truth tables to determine whether or not two statements are logically equivalent.
• Know DeMorgan's Laws, and be able to use them to rewrite statements.
• Be able to identify the hypothesis and conclusion in a conditional statement.
• Given a conditional statement, be able to write the converse, inverse, and contrapositive of the statement, and know which of these are logically equivalent.

Section 2.5: Verifying Arguments

Key Topics:
• Know the components of a logical argument: premises and a conclusion.
• Know how to translate an argument from English to symbolic form, and vice versa.
• Know how to use a truth table to determine whether or not an argument is valid.
• Memorize the forms of the standard valid arguments (logical laws), common invalid arguments (logical fallacies) and pairs of common equivalent logical statements (see the supplemental handout).
• Be able to determine whether a given argument is valid or in valid by translating it into symbolic form and comparing it to our list of standard logical laws and fallacies.
• Be able to provide the reasons for each step in a 2 column proof by providing line number references, and citing logical laws) and/or pairs of common equivalent logical statements.
• Be able to construct your own two column proof to verify that a given logical argument is valid.

Section 2.6: Using Euler Diagrams to Verify Syllogisms

Key Topics:
• Know how to construct Euler diagrams for quantified logical statements.
• Know how to analyze the validity of an argument using an Euler diagram.
• Know how to draw all possible Euler diagrams for a given argument.

Section 12.1: Introduction to Counting Methods

Key Topics:
• Know how to counting the number of elements in a set by listing it in roster form.
• Know how to count by making use of a tree diagram.

Practice Exam: Chapter Two Test page 135-136 # 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 16, 17, 18, 19, 20; Chapter 12 Test page 713-714 # 1, 2, 3