

# DISCRETE MATHEMATICS

## Math 245

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Review for First Exam, Logic (Epp: Ch. 2, 4th Ed., Ch 1, 3rd Ed.)

I. Know how to use truth tables:

- To show two statements equivalent.
- To prove a statement is a tautology or a contradiction.
- To show that an argument is valid.

II. Know how to translate from English to formal logic.

- Standard “or” versus “exclusive or.”
- Variety of ways to express a conditional.
- Know how to negate a statement.

III. Logical arguments:

- Know the basic valid arguments (modus ponens, disjunctive syllogism, universal instantiation etcetera). The names are not as important as an ability to use them well.
- (\*) Knights and knaves problems.
- (\*) Solution of a logic puzzle: 1) Identify the basic predicates, 2) translate the complex statements, 3) derive a conclusion using valid arguments.

(\*) Level 2 problems.