Exam 1 **September 2024**
Discrete Mathematics **Prof. Nollet**

The first exam will cover sections 3 through 9 in the book. I will not list review problems because (a) there are not so many problems in the book sections and (b) the book has a self test at the end of each chapter.

3 Definitions of *divisible, even, odd, prime and composite*. You need to know these, because even if I don't ask for them directly, you need to use them in any proof I might ask for.

4 Math statements (theorem, fact, proposition, lemma, corollary, claim, conjecture), meaning of "if-then" and "if and only if" statements, math versions of *and, or, not*. Some of these vary from everyday English. Vacuous truth.

5 Proofs of "if-then" and "if and only if" statements. Use the proof format shown in class and in the book (see page 17). Use definitions in your reasoning.

6 To disprove an "if-then" or "if and only if" statement, it requires just a single counterexample.

7 Boolean algebra: expressions constructed from the basic $\wedge, \vee, \neg$, also $\rightarrow$ and $\leftrightarrow$, truth tables and logical equivalence. Tautology and contradiction.

8 Lists and the multiplication principle in counting lists.

9 Factorials and product notation $\Pi_{k=1}^{n} a_k$.

Suggestions: Look over homework, quizzes, and examples from class. Checking book problems not assigned and the chapter self test are good ideas, because I may look at them when I write the exam.