Math 312, Section 102
Review for Final Exam (December 13, 2001)

Note: To a certain extent, the final exam will have an emphasis on the material learned after the midterm. However, *you will be accountable for all of the material learned during the entire semester on the final exam.* Please refer to the Review for Midterm (which you can obtain from the course web page) for the sections covered before the midterm, including suggested review problems.

Sections covered since the midterm:

5 Applications of Congruences. §5.3 Round-robin tournaments; §5.5 Check digits.

6 Some Special Congruences. §6.1 Wilson's Theorem and Fermat's Little Theorem; §6.2 Pseudoprimes; §6.3 Euler's Theorem.

7 Multiplicative Functions. §7.1 The Euler ϕ-function; §7.2 The sum and number of divisors; §7.3 Perfect numbers and Mersenne primes.

8 Cryptology. §8.1 Character ciphers; §8.3 Exponentiation ciphers; §8.4 Public key cryptography; §8.6 Cryptographic protocols and applications (Diffie–Hellman key exchange only).

Suggested review problems (do not hand in):

- Rosen, Section 5.3, p. 185, #3
- Rosen, Section 5.5, p. 195, #11 and #15
- Rosen, Section 6.1, p. 202, #5
- Rosen, Section 6.1, p. 203, #11 and #21
- Rosen, Section 6.2, p. 213, #5 and #7
- Rosen, Section 6.3, p. 218, #7
- Rosen, Section 6.3, p. 219, #19
- Rosen, Section 7.1, p. 228, #5 and #13
- Rosen, Section 7.2, p. 235, #1 and #3
- Rosen, Section 7.2, p. 236, #11
- Rosen, Section 8.1, p. 267, #3 and #5
- Rosen, Section 8.3, p. 284, #1 and #3
- Rosen, Section 8.4, p. 291, #5 and #7
- Rosen, Section 8.6, p. 304, #1