MATH 356-01
Review for Midterm

NOTE: This list may not be exhaustive. You are responsible for all material to date.

This exam is largely computational, but you should also expect conceptual questions (and at most one proof).

1. State the Division Algorithm and prove the existence portion of the Division Algorithm.
2. Computations in $\mathbb{C}$, including norms.
3. Constructing Pythagorean triples.
4. Linear Diophantine equations, including finding all solutions.
5. Algebraic structures, groups, rings, and fields.
6. The Euclidean Algorithm (finding gcds) and Bezout's Identity.
7. The Fundamental Theorem of Arithmetic.
8. Euclid's Lemma and the Prime Divisor Lemma.
9. Valuations.
10. Euler φ function
11. Modular arithmetic
    (a) Computations
    (b) Divisibility tests
    (c) Wilson's Theorem
    (d) Fermat's Little Theorem
    (e) Euler's Theorem
    (f) Order of an element
12. Lagrange's Theorem
13. RSA
14. Primitive roots