The final exam for this course is scheduled for Thursday, December 16, at 1:30 PM. It will be in our regular classroom. The exam will cover everything that we have done in the course. It will have two parts. The first part will be closed book and will consist of definitions, short-answer questions, and perhaps some short computations. The second part is open book; you can use your textbook, notes, and the handout on rings and fields.

My office hours for exam week are as follows:

Monday, December 13: 11:00–12:00

Tuesday, December 14: 11:00–3:00

Wednesday, December 15: 12:00–4:00

Thursday, December 16: 12:00–1:30

Here are some important terms and ideas from the rings-and-fields handout, along with some of the most important terms from earlier in the course:

Division algorithm
gcd(a, b)
Relatively prime
n mod m
D_n, $\mathbf{Z}_n$, $U(n)$, S_n, A_n, $GL(n, \mathbf{R})$
Group
Identity in a group
Inverse
Abelian group
Symmetry group
Subgroup
$|G|$ and $|a|$
Cyclic group, $\langle a \rangle$
Subgroups of a cyclic group
Center of a group, $Z(G)$
Euler phi function
Permutation groups
Cycles
Even and odd permutations
Group isomorphism
Automorphism
Inner automorphism
Cosets
Lagrange's Theorem
External direct product
$G \oplus H$
Normal subgroup
Quotient (factor) group
Group homomorphism
Kernel of a homomorphism
"Normal subgroup = Kernel"
Fundamental Theorem of Finite Abelian Groups

Ring
Addition, subtraction, multiplication
Commutative ring
Commutative ring with identity
Zero divisor
Integral domain
Unit in a ring
Field
$\mathbf{Q}$, $\mathbf{R}$, and $\mathbf{C}$ are fields
$\mathbf{Z}$ is an integral domain
$\mathbf{Z}_n$ is an integral domain iff n is prime
$\mathbf{Z}_n$ is a field iff n is prime
Trivial ring, $R = \{0\}$
Ring homomorphism
Ideal
Quotient ring
Trivial ideal, $I = \{0\}$
Proper ideal
Principal ideal, aR
Maximal ideal
I is maximal iff R/I is a field
I is proper iff $1 \notin I$
Every ideal in $\mathbf{Z}$ is principal
The ideal $n\mathbf{Z}$ is maximal in $\mathbf{Z}$ iff n is prime
Polynomial ring, $R[x]$
Degree of a polynomial
$F[x]$ is an integral domain (F is a field)
Division algorithm for polynomials
Every ideal in $F[x]$ is principal
Irreducible polynomial
$p(x)$ irreducible iff $p(x) \cdot F[x]$ maximal
Irreducible $p(x)$ has a root in $F[x]/(p(x) \cdot F[x])$
$\mathbf{C} \approx \mathbf{R}[x]/((x^2+1) \cdot \mathbf{R}[x])$ (!)