Material to Know for Math 788F Test

- Gauss' Theorem connecting irreducibility over $\mathbb{Q}$ with irreducibility over $\mathbb{Z}$

- The Schönemann-Eisenstein Criterion (know a proof of Theorem 2.1.1)

- Determining if a polynomial is Eisenstein (know how to use the algorithm)

- Newton polygons (know how to use to determine irreducibility)

- Perron's Theorem (know the proof of Lemma 3.1.2 and the proof of Theorem 3.1.1 given Lemma 3.1.3)

- Prime values of polynomials (know the proof of Theorem 3.3.1)

- Know the proof of Lemma 3.4.3

- Modulo arithmetic notation (know how to work $(\bmod\, p, f(x))$)

- Know Theorem 4.2.1

- Know the Pellet-Stickelberger Theorem

- Kronecker's theorem that a monic irreducible polynomial with all its roots on the unit circle is cyclotomic (know the proof of Theorem 6.4.1)

- The factorization of $\Phi_n(x)$ modulo a prime p (know how to use Theorem 6.6.1)

- Homework and Old Test Problems