Mathematics 361: Number Theory
Assignment #6

Reading: Ireland and Rosen, Chapter 5 (including the exercises)

Problems:

Ireland and Rosen, Exercises 4.8, 4.13 as it should be phrased (do these first); 4.1,4.17,4.18; 4.2 (for \( p = 7, 11, 13\)),4.19; 4.9; 4.10 (let \( f(d) = \sum_{u: \text{order } d} u \) and let \( g(d) = \sum_{u: u^d = 1} u \), which can be evaluated as a geometric sum; \( g \) has an expression in terms of \( f \) and then Möbius inversion gives \( f \) in terms of \( g \); the exercise is requesting \( f(p - 1) \)); 4.15; 4.20. (The more you use algebra, the less tedious these will be.)