

Homework for Monday, November 7

1. Read through the Summary of notes on \mathbb{Z}_n . Write out direct proofs of the implications $1 \implies 5$, $5 \implies 4$, $4 \implies 2$ of Theorem 4. (Try not to look them up!) Review what went into the proofs of $1 \implies 2$ and $2 \implies 1$. (Which one of these is easy?)
2. For $n = 3, 11$ and 12 ,
 - (a) Write out a multiplication table for \mathbb{Z}_n .
 - (b) List the units of \mathbb{Z}_n and determine their inverses.
 - (c) List the nonzero zero-divisors of \mathbb{Z}_n .
 - (d) Compute all of the powers of $[2]$, of $[5]$, of $[10]$.
3. Study the linear congruence theorem on p.57. We'll discuss it on Monday. Then (heads up), I will have you do Exercises 8.3-8.6 on p. 58 for Wednesday. 8.4 is particularly cool for future teachers.