

**Directions:**

- Print out this piece of paper and use it as a cover sheet. Write your name in the upper right hand corner.
  - Your homework should be stapled and each problem should occur in order.
  - Do not hand in scratch work.
  - Homework is due at the start of class.
- 

1. PROBLEMS

1. Finish reading Chapter 6. Start reading Chapter 8.
  2. Let  $\{a_0, a_1, \dots, a_n\}$  be  $n + 1$  different integers. Show that there exists  $i, j \in \{0, 1, \dots, n\}$  with  $i \neq j$ , with that  $a_i \equiv a_j \pmod{n}$ .
  3. Let  $r \in \mathbb{Q}$ . Prove that if  $r \neq 0$ , then  $r/\sqrt{2}$  is irrational.
  4. Give three different proofs including a direct, a proof of the contrapositive, and a proof by contradiction for the following statement: “If  $n$  is an odd integer, then  $7n - 5$  is even.”
  5. Textbook exercises: 6.1, 6.3, 6.5.
  6. More textbook exercises from Chap. 6 will come on your next homework!
-