

**MATH 512 HOMEWORK-4 DUE AT THE BEGINNING OF CLASS ON THURSDAY,
FEBRUARY 19.**

One goal for this course is for you to develop your skill in effectively communicating mathematics. With this in mind, you should clearly write up your solutions. All your work should be clear and grammatically correct, in addition to mathematically sound. Solutions with little or no justification will receive little or no credit.

- (1) Do exercises 4.8, 4.9, 4.10, and 4.11 from chapter 4.
- (2) Prove Jeremy's conjecture: *Let a and b denote positive integers with $(a, b) = 1$. Then the largest (a, b) -inaccessible number is $ab - (a + b)$.* This is problem 4.12, and you can use the outline if you like.
- (3) Iff you have time, say what you can about the relationship between the question of solving
$$ax \equiv 1 \pmod{m},$$
and the problem with dividing the congruence
$$12 \equiv 8 \pmod{4}$$
by 4. Say what you can about the relationship between these problems and equation solving with your students.
- (4) Read chapter 5 in *Integers, polynomials and rings*.