

## HOMWORK ASSIGNMENT # 12

DATE: APRIL 6, 2009 DUE: APRIL 13, 2009

Write the question as well as an explanation for the following problems. The first question is to be your first journal entry for the final project and I would like to read the problem. Make sure that this description is on a separate sheet of paper so that you can hand it in with your final project at the end of the term.

For the last three problems, recall that  $a \equiv b \pmod{n}$  if  $a - b$  is divisible by  $n$ .

- (1) Write your first journal entry for the group project. Include each of the following:
  - (a) The full names of the group members along with their email addresses.
  - (b) A careful and complete description of the starting point for the project.
  - (c) An outline of progress to date. Have you resolved the problem or situation which was your starting point? What techniques did you use? Are you satisfied with what you have accomplished? Are there things you would like to improve?
  - (d) A wish list for the rest of the project. What extensions either of the problem or the methods used are you planning to consider?
- (2) Show that if  $a \equiv b \pmod{n}$  and  $c \equiv d \pmod{n}$ , then  $ac \equiv bd \pmod{n}$ .
- (3) Show that if  $a \equiv b \pmod{nm}$ , then  $a \equiv b \pmod{n}$ .
- (4) Give a counterexample to the statement: if  $a \equiv b \pmod{n}$ , then  $a \equiv b \pmod{nm}$ .