THEORY OF NUMBERS, Math 115 A
Homework 4 Due Wednesday October 23

1. Using the Fermat factorization method, factor each of the following positive integers: 73, 8051, 46009, 3200399.

2. Factoring kn by the Fermat factorization method, where k is a small positive integer, is sometimes easier than factoring n by this method. Show it is easier to factor 3(901) than to factor 901.

3. A student returning from Europe changes his French and Swiss francs into US. money. If he receives 17.06, and received 19 cents for each French and 59 cents for each Swiss franc, how much of each type of currency did he exchange?

4. Find all integer solutions of the linear diophantine equations

   a) $2x_1 + 5x_2 + 4x_3 + 3x_4 = 5$

   b) $15x_1 + 6x_2 + 10x_3 + 21x_4 + 35x_5 = 1$

5. The post office of Davis is left with stamps of only two values. They discover that there are only 33 postage amounts that cannot be made up using these stamps, including 46 cents. What are the values of the remaining stamps?

6. Write a MAPLE program that finds the solution of a linear diophantine equation in two variables. Include a print out of the program and verify it is correct in a couple of instances.