Classical Algebra Written Assignment No. 1

due Monday, September 30, 2002

Directions: Written assignments must be typeset. While it is neither necessary nor desirable to show small details of computation, you must indicate what you are doing and explain any reasoning used. Accuracy is important; with 5 problems in an assignment worth 5 points, there will be no room for partial credit on a problem.

If you are in the writing intensive division of the course, you must complete each written assignment in a satisfactory way. This may require re-submission after an initial evaluation.

1. Find the greatest common divisor of the integers 54321 and 12345.
2. Find the continued fraction expansion of the rational number 54321/12345.
3. Find the least common multiple of 54321 and 12345.
4. Find the prime factorizations of 54321 and 12345.
5. Find all integer points on the following lines:
   (a) $54321x + 12345y = 3$.
   (b) $54321x + 12345y = 4$.
   (c) $54321x + 12345y = 12$.