Math 218: Elementary Number Theory

Homework 13 : Due November 11

3.1 #4. Read Example 3.1.5 on page 107 in the book.

(a) Describe carefully what went wrong in this problem.

(b) How can you choose a different factor to multiply by to fix the problem in (a)?

3.1 #7. Use the congruence $612x \equiv 156 \bmod 84$ to find *integer* solutions x and y to the equation $612x + 84y = 156$.

3.1 #8. Use Theorem 3.1.1 to formulate a condition for when the equation $ax + by = n$ has a solution.

1. Find all integers that give the remainders 1, 2, 3 when divided by 3, 4, 5, respectively.

3.2 #4. In the arithmetic progression $11x + 7$ for $x = 1, 2, 3, \ldots$ find three consecutive terms divisible by 2, 3, 5, respectively. You must use Theorem 3.2.2 to solve this.