Collected Homework Week 13

MATH 278: Number Theory   Name (Print): _____
Due: April 22, 2015 at 4:00pm

1. **Chinese Remainders**

   (a) Find three consecutive numbers such that the first is divisible by 5^2, the second is divisible by 3^3, and the third is divisible by 2^4.

   (b) Solve $341x \equiv 521 \pmod{595}$. (Note $595 = 5 \cdot 7 \cdot 17$.)

2. Write a proof of Theorem 4.3 from page 54 of our text.

3. Write a proof of Theorem 4.4 from page 54 of our text.

4. Solve exercise 4.20 on page 57 of our text.

Notebook Problems Week 13

1. Write a proof of Theorem 4.2 from page 54 of our text.

2. Quickie: write a proof of Theorem 4.21 from page 57 of our text.

3. Prove that if p and q are distinct primes, then $p^{q-1} + q^{p-1} \equiv 1 \pmod{pq}$.