Math 116 Number Theory with Travis Kelm | **Homework #6 Euler's Function** | **Spring 2007 CSU - Fresno** | **Due 8 March 2007**

In your solutions you must explain what you are doing using complete sentences.

Misc. Problems

Modular Inverses: Prove that a positive integer t has an inverse mod m if and only if $\gcd(t, m) = 1$.

Modular Division: Suppose that $ta \equiv tb \pmod{m}$. Prove that if $\gcd(t, m) = 1$ then $a \equiv b \pmod{m}$. (In other words, you can "cancel" the t from both sides.)

Rel Primeness with mod Glasses: Prove that if $\gcd(a, m) = 1$ and if $a \equiv b \pmod{m}$ then $\gcd(b, m) = 1$ as well.

Section 7.1 - Euler's Function

Exercise 6:

Exercise 8:

Exercise 15:

Exercise 26:

Exercise 27:

Exercise 28:

Exercise 32: