Math 310 Spring 2017 **Due 2/1/2017**

Homework #3

Please write down the amount of time spent on this assignment and that name(s) of anyone you worked with.

1. Let $a, b, c \in \mathbb{Z}$ be so that $a, b, c \neq 0$. Write a formal definition for the greatest common divisor of a, b, c, denoted (a, b, c).

2. Show that for all integers a, b, c, all non-zero, $((a, b), c) = (a, (b, c)) = (a, b, c)$.

3. Show that for all $a, b \in \mathbb{Z}$ both non-zero and all $m, n \in \mathbb{Z}$, $(a, b) \mid (am + bn)$.

4. (a) Find $(6, 21)$.
   (b) Compute $(6, 21 + 6n)$ for a few values of n. Make a conjecture about the value for all n.
   (c) Try different values of a, b and make a conjecture about $(a, b + an)$.

5. Section 1.2 #25.

6. Section 1.2 #26.

Remember to write your solutions legibly on separate paper and staple your assignment before handing it in