Problem Set 1
Due Friday, October 5.

Algebra
Math 110A, Fall Quarter 2012

1. Do problems 1.1.4, 1.1.5, 1.1.7 in the textbook.
2. Do problems 1.2.1 (b), (d), (f), 1.2.13, 1.2.24, 1.2.31, 1.2.34 in the textbook.
3. Recall that integers $a, b$ are said to be relatively prime if their greatest common divisor is 1.
   (a) Suppose we can write $1 = sa + tb$ for some $s, t \in \mathbb{Z}$. Show that $a$ and $b$ are relatively prime.
   (b) Show: if $a$ and $c$ are relatively prime, and $b$ and $c$ are relatively prime, then $ab$ and $c$ are relatively prime. (Hint: if $1 = sa + tc = s'b + t'c$ with $s, t, s', t' \in \mathbb{Z}$, consider $(sa + tc)(s'b + t'c)$ and use part (a).)