MA 261 — Homework #5

Due in class Wednesday, February 26, 2014

1. Exercise 1.36/1.37 (page 18):
(1) Use the Euclidean Algorithm to find $\gcd(162, 31)$.
(2) Find integers x and y such that $162x + 31y = \gcd(162, 31)$.

2. Let a and n be integers with $n > 0$. If $\gcd(a, n) = 1$ show that there exists an integer x such that $ax \equiv 1 \pmod{n}$.

3. Prove Theorem 1.42 (page 19): Let $a, b,$ and n be integers.
If $a|n$ and $b|n$ and $\gcd(a, b) = 1$ then $ab|n$.