Introduction to Abstract Mathematics
Fall 2013

Assignment 5.2
Due October 4

Exercise 1. Let $a, b, c \in \mathbb{Z}$. Prove that if $c|a$ and $c|b$, then $c|xa + yb$ for every $x, y \in \mathbb{Z}$.

Exercise 2. Let $m, n \in \mathbb{Z}$. Prove that if $m|n$ and $m|n + 1$, then $m = \pm 1$.

Exercise 3. Show that there are no positive integer solutions to the equation $m^2 - n^2 = 1$.

Exercise 4. Show that there are infinitely many $m \in \mathbb{Z}$ so that 5 divides $3m - 1$.