

ASSIGNMENT 3

ECE 103 (Spring 2009)

Due in tutorial on Monday, June 1.

1. Prove that $\forall n \in \mathbb{Z}, 6|(n^3 - n)$.
2. Let $n \in \mathbb{N}$, and suppose that $a, b_1, b_2, \dots, b_n \in \mathbb{Z}$ satisfy $a|b_1, a|b_2, \dots, a|b_n$. Prove by induction on n that for any $x_1, x_2, \dots, x_n \in \mathbb{Z}, a|(b_1x_1 + b_2x_2 + \dots + b_nx_n)$.
3. (a) Compute $\text{GCD}(1113, 260)$.
(b) Find integers x and y such that $1113x + 260y = \text{GCD}(1113, 260)$.
4. (a) Compute $\text{GCD}(1785, 693)$.
(b) Find integers x and y such that $1785x + 693y = \text{GCD}(1785, 693)$.