Name: _____

Homework #1 **Abstract Algebra**

1. Use the Euclidean Algorithm to compute the following.
   (a) $\gcd(12, 5)$
   (b) $\gcd(100, 27)$
   (c) $\gcd(1256, 437)$
   (d) $\gcd(10345, 5341)$
2. Use induction to show that the following identity holds for all natural numbers n.
$$\sum_{k=1}^{n}(2k-1) = n^2$$
3. Find integers u and v such that
$$\gcd(1245, 721) = 1245u + 721v.$$