MAT 129
Lab #2
February 26, 2007

1. Prove or disprove the following statement. An integer x is odd if and only if $x + 3$ is even.

2. Prove or disprove the following statement. A positive integer is composite if and only if it has at least two distinct prime factors.

3. Prove or disprove the following statement. If a, b, and c are integers such that $b + c$ is divisible by a, then b is divisible by a or c is divisible by a.

4. Prove or disprove the following statement. If $d|a$ and $d|b$ then $d|(ax + by)$ for all integers x and y.

5. Is there a four-digit number of the form $aabb$ that is a perfect square (that is, $aabb = N^2$ for some integer N)? Explain.