**Section 2.4**

**Direct Proofs**

Prove each of the following:

1. **For all integers n, if n is odd then n2 is odd.**
2. **For all integers n, if n is even then n2 is even.**
3. **The negative of an even integer is even.**
4. **For all integers n, if n is odd than 3n+5 is even.**
5. **For all integers n, if n is even than 3n+5 is odd.**
6. **For any two odd integers, their sum is even.**
7. **The sum of any two rational numbers is a rational number.**
8. **If k is any odd integer and m is any even integer than k2 + m2 is odd.**
9. **If a is any odd integer and b is any even integer, then 2a + 3b is even.**