Challenge

1. Prove: If $3x + 5$ is an odd integer, then x is an even integer. (Proof by contrapositive)

2. Prove: If the square of an integer x is even, then x is even.

3. Prove: For all integers, n, $n^2 + n + 1$ is odd.

   (Hint: Use proof by cases, where one case starting with n is even, and the second case starting with n is odd.)