Math 3520 - Quiz 1

Name:_____

Write proof in complete and proper English.

1. Prove if $5|n^2$ then $5|n$.
2. Disprove if $9|n^2$ then $9|n$.
3. Prove for all odd $n \in \mathbb{Z}$ we have $4|n^2 - 1$.
4. Prove with induction that

$$1 + 3 + 5 + \cdots + (2k - 1) = k^2$$