Due: Thursday, Sept. 1

Prove each of the following statements. (Please make sure to write your answers in complete sentences.)

Definition. We say that an integer $n$ is odd if there exists an integer $k$ such that $n = 2k+1$.

1. Let $a, b \in \mathbb{Z}$ and suppose that $a$ is even. Prove that $ab$ is even.
2. Let $a, b \in \mathbb{Z}$. Suppose that $a$ is even and that $b$ is odd. Prove that $a + b$ is odd.
3. Suppose that $n$ is odd. Prove that $n^2$ is odd.