Math 2001, Spring 2023. Katherine E. Stange.

## 1 Assignment

Prove the following theorem.
Theorem 1. Let $n \in \mathbb{Z}$. If $n=x^{2}+y^{2}$ then $n \not \equiv 3$ modulo 4 .
Hint: There are only four 'numbers' in the mod 4 world. Try squaring and adding them in all possible ways.

