

1 Assignment

Prove the following theorem.

Theorem 1. *It is false that for every integer x , $x^2 + 1$ is prime.*

disprove this

This is also "proving the existence of a counterexample."

Pf. Let $x=0$.

Then $x \in \mathbb{Z}$ and $x^2 + 1 = 1$ is not prime. \square

Also $x=3 \rightarrow x^2 + 1 = 10$
 $x = \text{odd} \rightarrow x^2 + 1 = \text{even, not prime.}$
 $\neq 1$ $\neq 2$
 $\neq -1$