Math 55 Quiz 4   Name: _____
GSI: Jeremy Meza
October 16, 2019

1. What is wrong with the following proof? *(2 points)*.

    Claim: All integers are perfect squares.
    Proof: Clearly 1 is a perfect square. Suppose the claim works for integers up to and including k. Then if we write $k + 1 = ab$, the IH tells us that $a = m^2$ and $b = n^2$ for some integers m, n. Thus, $k + 1 = m^2 n^2 = (mn)^2$ and $k + 1$ is a perfect square. Thus, by induction we conclude that all integers are perfect squares.

2. Prove that every natural number greater than 1 has a prime factorization. *(8 points)*.