Problem 2 (due Monday, September 28)

Let $\mathbb N_0$ be the set $\{0,1,2,\ldots\}$ of all non-negative integers. Find all functions $f:\mathbb N_0 \longrightarrow \mathbb N_0$ such that $f(a^2+b^2)=f(a)^2+f(b)^2$ for all a,b in $\mathbb N_0$.

No complete solution was received. Partial solutions submitted by Yuqiao Huang, Maxwell T Meyers, and Matthew Pressimone. Detailed solution is discussed in the following link Solution