Since the problem does not mention about reduction, we'll assume that it's under $\leq_k$. By definition of **NP**-hard, a decision problem p is **NP**-hard if for all q $\in$ NP, q $\leq_k$ p. Hence, in order to prove that f is not **NP**-hard, just need to find a problem $x \in$ **NP** such that $x \leq_k f$ is not possible. So, by choosing the HAMPATH problem, we want to see if HAMPATH $\leq_k f$.

However, for HAMPATH, when there exists a Hamilton path within the input graph, it would output true, and false otherwise. But for problem f, no matter what the input is, it would always output false. Hence, there does not exist a polynomial time computable function m such that it can provide the same instance output for both HAMPATH and f. Therefore, the decision problem f is not **NP**-hard.