1. Suppose F is an ordered field and let $A = \{a \in F : a^2 < 2\}$. Prove that M is an upper bound for A if and only if $M > 0$ and $M^2 \geq 2$.

2. Suppose F is an ordered field and let $A = \{a \in F : a^2 < 2\}$. Suppose $M = \sup A$, prove $M^2 = 2$. You may use that we proved in class, that $M^2 \leq 2$.