Let $F$ be the set of all real-valued functions with domain $\mathbb{R}$ and let $\tilde{F}$ be the subset of $F$ consisting of those functions that have a non-zero value at every point in $\mathbb{R}$.

A. $\tilde{F}$ is not a subgroup of $F$ under function addition. Why?

B. $\tilde{F}$ is a subgroup of $F$ under function multiplication.
   
   i. Explain why $\tilde{F}$ is closed under function multiplication.

   ii. Explain why the multiplicative identity of $F$ is also in $\tilde{F}$.

   iii. If $f \in \tilde{F}$ then the multiplicative inverse of $f$ is also in $\tilde{F}$. Explain how to construct this multiplicative inverse and why it is in $\tilde{F}$. 