1. Prove the sum and product of natural numbers is a natural number.

   Hint:
   Let $A = \{n \in \mathbb{N} : m+n \in \mathbb{N}\ \forall m \in \mathbb{N}\}$. Show that A is inductive. Do a similar thing for products.

2. Show that the sum and product of integers is an integer.

   Hint:
   First show that if $m, n \in \mathbb{N}$ and $m < n$ then $n - m \in \mathbb{N}$ by letting $A = \{m \in \mathbb{N} : n - m \in \mathbb{N}\ \forall n \in \mathbb{N}, n > m\}$. Show A is inductive.