1. Let $A = \{ s^4 - s^2 : s \in \mathbb{Z} \}$ and $B = \{ n \in \mathbb{Z} : 4 \mid n \}$. Prove that $A \subseteq B$. Do you think $A$ is a proper subset of $B$ or $A$ is equal to $B$? Justify your answer.

2. Use the Principle of Strong Induction (POSI) to prove that every positive integer $n$ can be written in the form $n = (2^s)t$, where $s$ is a non-negative integer and $t$ is an odd integer.