March 21, 2022

Due Date: 4 april '22

1. Prove that the set $\mathbb{N}$ does not belong to $Rel_{*\mathcal{R}}$.

2. Prove that $^*[0,1]$ contains a positive infinitesimal.

3. Let $s : \mathbb{N} \to \mathbb{R}^+$ be a sequence such that the extended hypersequence $^*s : \mathbb{N} \to {^*\mathbb{R}^+}$ never takes infinitesimal values. Prove that s is bounded away from zero in $\mathbb{R}$.