# MATH 314 ASSIGNMENT 3, FALL 2016

### Due in class on Friday, February 5

Part 1. Read and 2.3–2.6 of Hoffman–Kunze.

Part 2. Do and hand in the following problems in Hoffman–Kunze.

- §2.3, problems 7, 8, 14

- §2.4, problems 5, 6

- §2.6, problems 6, 7

Part 3. (more challenging than those in Part 2) Let $V$ be the set of all $\mathbb{R}$-valued functions on $\mathbb{N}$, with the obvious $\mathbb{R}$-vector space structure. Let $W$ be the subset consisting of all elements $f : \mathbb{N} \to \mathbb{R}$ of $V$ such that there exists a *finite* subset $S \subset \mathbb{N}$ such that $f(n) = 0$ for all $n \notin S$. Does $W$ and $V$ have the same dimension? (Please give a rigorous proof for your answer.)