Math 304, Section 5 — Quiz 5 – February 20

Name:_____

1. Let $V \subset \mathbb{R}^{\mathbb{N}}$ be the set of convergent sequences of real numbers, with addition and scalar multiplication defined as for sequences. Is V a vector space? Why or why not?

2. Let $W \subset \mathbb{R}^{\mathbb{R}}$ be the set of real-valued functions on the real line which are *nowhere zero*. (Example: e^x.) Is W a vector space? Why or why not?

3. Is there a linear function $p\colon \mathbb{R}^2 \to \mathbb{R}$ such that $p(1,2) = 1$ and $p(2,4) = 3$? Why or why not?

4. Suppose $f\colon \mathbb{R}^2 \to \mathbb{R}$ is a linear function such that $f(1,2) = 0$ and $f(2,3) = 1$. Find $f(x,y)$.