

Math 231 — Hw 5

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1. Prove that for any $v \in V$, $-(-v) = v$.

(Hint: Use Thm 1.32).

2. Suppose $a \in \mathbb{F}$ and $v \in V$. If $av = 0$, show that either $a = 0$ or $v = 0$.

(Note: 0 is being used both for the additive identity of the field element and the additive identity of the vector space. This is an “abuse of notation,” but you should be able to tell which is which.)

3. Suppose $-1 \notin \mathbb{F}$. Prove that there exists an element $\lambda \in \mathbb{F}$ such that for any $v \in V$, $v + \lambda v = 0$.