

Problem. Find all fields F and vector spaces V over F for which every function $f: V \rightarrow V$ which satisfies $f(c\mathbf{v}) = cf(\mathbf{v})$ for all $\mathbf{v} \in V$ and $c \in F$ is linear, that is, which also satisfies $f(\mathbf{v}_1 + \mathbf{v}_2) = f(\mathbf{v}_1) + f(\mathbf{v}_2)$ for all $\mathbf{v}_1, \mathbf{v}_2 \in V$.