Problem Set 4: 1.9

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PROBLEM 2.1

Let U, V, W be vector spaces, with $\phi : V \times W \to V \otimes W$ the natural mapping, $l : V \times W \to U$ bilinear.

NTS: exists unique $\widetilde{l} : V \otimes W \to U$ such that $\widetilde{l} \circ \phi = l$.

Define $\widetilde{l}$ on decomposable tensors of the form $v \otimes w$ as $\widetilde{l}(v \otimes w) = l(v, w)$