

Quiz 2

Thursday, 30 June 2005
Math 110

Name: _____

1. True or false. If true, explain why; if false, give a counterexample.
 - (a) If V is a one-dimensional vector space, the only subspaces of V are $\{0\}$ and V .

 - (b) If W is a subspace of V , every basis of V contains a basis of W .

2. Let V, W be two vector spaces, and let $T : V \rightarrow W$ be a function. We define the *graph* of T as $\{(x, Tx) : x \in V\}$, which is a subset of $V \oplus W$ (the external direct sum). Prove that T is linear if and only if the graph of T is a *subspace* of $V \oplus W$.