Week 6   Simple Algebras and the Brauer Group
                  Jacobson II: 4.6, 4.7, 5.3

1. Jacobson II 4.6.1

2. Jacobson II 4.6.9

3. Jacobson II 5.3.1

4. Suppose that R is a semisimple algebra over a field K. Let L be a field containing K. Suppose that V, W are left R-modules which are finite dimensional vector spaces over K. Show that if $V \otimes_K L$ and $W \otimes_K L$ are isomorphic as $R \otimes_K L$ modules, then V and W are isomorphic as R modules. (Hint: Consider the character of the modules involved and show that $\chi_V(r) = \chi_{V \otimes L}(r \otimes 1)$.) See Jacobson II exercise 5.3.3 for a generalization.