1. Using definitions only, prove statement (3) at the bottom of page 384.

2. Using definitions only, prove statement (4) at the top of page 385.

3. Using definitions only, prove that statement (5) is equivalent to the Completeness (Adequacy) Theorem.

4. Compactness Theorem: Let Γ be a set of formulas. If every finite subset of Γ is satisfiable, then Γ is satisfiable.

   We will see a proof of this theorem later. For this problem, use the Compactness Theorem to prove the following:

   Let B be a formula, and Γ a set of formulas. If $\Gamma \models B$, then for some finite subset Δ of Γ, $\Delta \models B$.

5. Use the above problem, together with the Completeness Theorem (2.3) to prove the Strong Completeness Theorem, i.e., statement (2) on page 384.