Math 160A - Winter 2002 - Homework #2

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Due Friday, January 25.
From the textbook. Section 1.5, pages 52-53: problems 1, 2, 3, 9.

And, prove the theorem below.

Definition. Let Σ and Γ be sets of formulas. Then Σ *tautologically implies* Γ, $\Sigma \vDash \Gamma$, if and only if for all $\phi \in \Gamma$, $\Sigma \vDash \phi$.

Theorem. The following are equivalent:

a. Σ_1 and Σ_2 are tautologically equivalent.

b. $\Sigma_1 \vDash \Sigma_2$ and $\Sigma_2 \vDash \Sigma_1$.

c. For all truth assignments v, v satisfies Σ_1 if and only if v satisfies Σ_2.