Problem Set 10

1. Given NBA A_1, A_2, construct an NBA A_3 such that $L(A_3) = L(A_1) \cap L(A_2)$.
2. Consider an ω-automaton $(Q, \Sigma, \delta, q_0, Acc)$, and let $\mathcal{G} \subseteq 2^Q$ be a set of good states. An ω-word α is said to be accepted iff there is a run ρ of α such that $Inf(\rho) \in \mathcal{G}$. $\delta : Q \times \Sigma \to 2^Q$ is the transition function.
   - Construct a deterministic ω-automata with this acceptance condition that captures the language "Finitely many b's".
   - Show that ω-automata with this acceptance condition captures ω-regular languages.
   - How do you complement a deterministic ω-automata with this acceptance condition?
3. Prove or disprove : A finite set of infinite words is ω-regular.
4. Give an example of a language accepted by an NBA, but which cannot be written in LTL.