Logic 1, WS 2008. Homework 8, given Dec 18, due Jan 8.

We denote by t a ground term, by P a predicate symbol, and by f a function symbol. Prove the following using the definition of the semantics in first order predicate logic:

1. $P[t] \models \exists_x P[x]$.

2. $P[t] \wedge \forall_x \neg P[x]$ is unsatisfiable.

3. $\forall_x P[x] \models \forall_{y,z} P[f[y,z]]$.