Last lemma to prove:

**Lemma 1.** If $Y$ is a complete and consistent set of formulas, then there exists $Y$-satisfiable.

The truth assignment $h$ assigns $h(P_i) = \text{True}$ if $\vdash Y P_i$ and $h(P_i) = \text{False}$ otherwise. Then we prove by induction on $S$ that $h(S) = \text{True}$ iff $S \in Y$.

**Theorem 1 (Compactness Theorem).** If $Y$ is a set of formulas such that every finite subset of $Y$ is $Y$-satisfiable, then $Y$ is $Y$-satisfiable.

Examples.

**Homework**

- No further homework.
- Important reminder - test is Tuesday, October 5.