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Administrivia

- Reminder: Homework 1 due next Monday at 5pm.

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Minute Essay From Last Lecture

- How much of this (if any) looks familiar to you from other courses?
Some answers: "None." "Sort of like geometry proofs." "Reminds me of logical fallacies."

Recap — Propositional Logic Proofs

- Idea is to construct detailed formal proof (“proof sequence”) capturing “valid argument” that one thing logically follows from others.

Problems sometimes cast in terms of hypotheses and conclusion, sometimes as “prove that $P \wedge Q \rightarrow R$ is a tautology”. Same thing — “deduction method.”

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- Proof sequence can be thought of as sequence of valid moves in an elaborate game. Typically guided by some deeper understanding of why conclusion follows from hypotheses, but — this is a formal system, and we’re not allowed to make up new moves, however plausible-seeming, unless we can prove (with a proof sequence) that the new move is valid.

What Does This Buy Us?

- Yes, this can seem long and tedious. But . . .
- It’s in some ways easier than other approaches, and certainly more reliable.
- Compare to “word problems” in algebra — first convert from natural language to math, apply math, convert back — with practice, easier and more reliable than guessing.
- In a way, we’re replacing thinking with symbol manipulation!

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More Examples

- Section 1.2 problems 19, 20, 33, 34, 38, 43.

(Divide into groups of two or three and do at board. Problem 34 is tricky — hint is to use problem 31.)

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Minute Essay

- None — sign in (on the board).

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