Final Review

Wednesday

Final 2014 is representative of what you'll expect on the final. Some different topics.

Short answer needs brief justification. Need more than just a definition.

Countable sets (picture + few words)

Definitions: Savitch's theorem NPSPACE PSPACE

If you can do something non-deterministically, you can kill the N and do it deterministically.

PSPACE-complete

By definition: A is PSPACE-complete means that A is in PSPACE, and any language in PSPACE can be reduced to in polynomial time to A.

P^A means a polynomial time Turing machine with an oracle A.

No horrifically long TMs. Something with a fairly simple algorithm.

Likely won't need multitape (gucci tho).

Friday

Pumping Lemma

let $s = a^1 00 \in L$, then $s = xyz$

Myhill-Nerode

Compute accepting futures from a^{0-100}

Walk counting functions

number of words length n satisfying

$f(n) = c_1 f(n-1) + ... + c_{100} f(n-100).$

NP reductions + NTM

Universal Turing machine

HALT is recognizable, not decidable.

Most theorems about Turing machines with oracle L, don't depend on L.

Cook-Levin theorem