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Ch. 9 Baker-Gill-Solovay

Ultimate goal: $\exists$ oracles B, for which $\boxed{P^B = NP^B}$ and oracles A s.t. $\boxed{P^A \neq NP^A}$

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Today: SUBSET-SUM is NP complete.

[This is in the textbook.]

Also PARTITION is NP-complete

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Ch 8: SPACE, PSPACE, NSPACE, NPSPACE

CPSC 421/501 Nov 18

Old school: { regular languages, context-free, ⋮, Turing recognizable }

hope: tools for regular languages, context-free, etc. ⇝ tools for Turing recognizable

After early 1970's → today we still don't know
- $P \neq ?\ NP$
- A lot of easier problems unresolved

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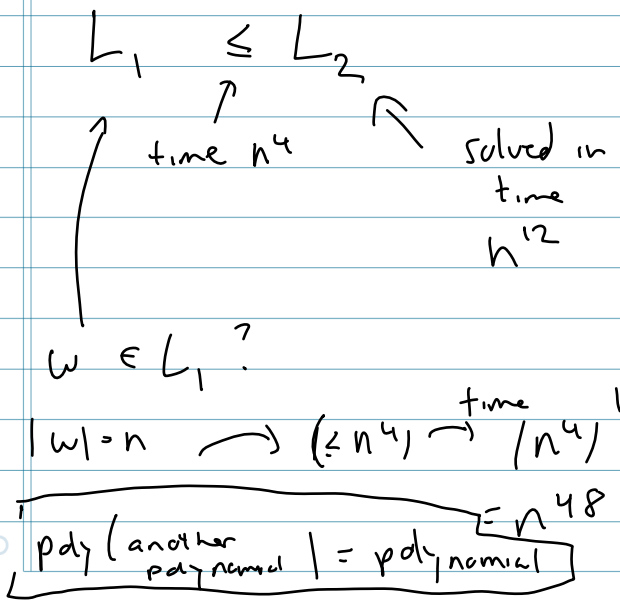
Focus: P vs. NP: ① why interesting ② what methods won't work

Currently talking about ①

② Use Chapters 3, (7), 8, 9

Why P reasonably reasonable



poly(another poly) = poly

$TIME(f(n)) = \{$Languages decidable in time $O(f(n))\}$

$SPACE(f(n)) = \{$Languages decidable in space $O(f(n))\}$

NTIME = same with nonded Tms

NSPACE = - - - - - -

$PSPACE = \bigcup_k SPACE(n^k)$

NPSPACE = - - NSPACE - -