

Reminders:

GA4 due now

PA6 due Thursday

Final Exam Friday Dec 11

9.30 - 11.20

HERE

Today:

reductions to show NP-hardness.
poly-time revisited

SAT is NP-Complete. (NPC)

[SAT \in NP]

SAT is NP-hard.

\hookrightarrow if there is a poly-time alg for SAT, then there is a poly-time alg for problem in NP.
(P = NP)

SAT - satisfiability problem.

- given boolean variables x, y, z (etc) determine if there is a satisfying assignment for

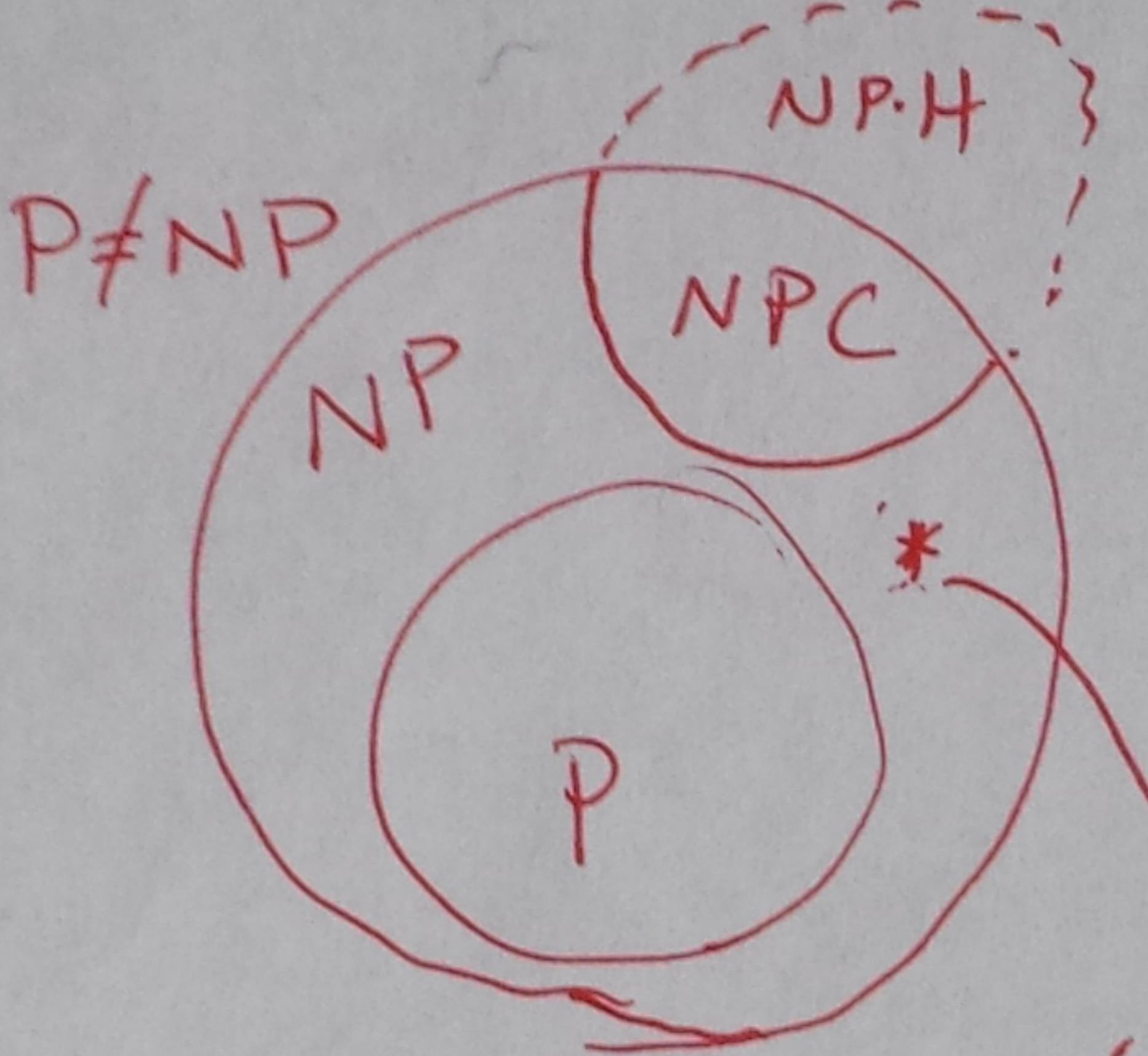
take home example ↗ a given boolean formula.

SAT $\xrightarrow{\text{reduces to}}$ 3SAT (at most 3 literals per clause)

eg.
$$\underline{(\bar{x} \vee y \vee \bar{z})} \wedge \underline{(\underline{x \vee \bar{y} \vee z})} \wedge \underline{(\underline{x \vee y \vee z})} \wedge \underline{(\bar{x} \vee \bar{y})}$$

$x=0$
 $y=1$
 $z=1$

not
and or
clause.



Ladner's th^m
(NP-intermediate).

