Thursday 8/30/18

NPC

Aug 30-1:59 PM

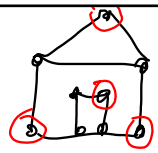
NP

Independent Set

Input: G, k

Q: Is there an independent set in G of size $\geq k$

Aug 30-2:03 PM



→ Decision version
- Optimization version
- Search version

Aug 30-2:04 PM

NPC

3SAT

If solve 3SAT in poly time ⇒ ∀ problems in NP can be solved in polynomial time.

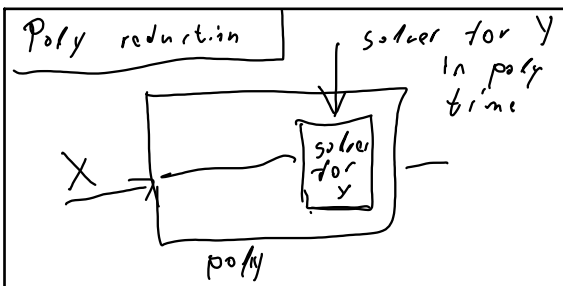
Aug 30-2:07 PM

Polynomial time reduction

$X \leq_p Y$: If we can solve Y in poly time then we can solve X in poly time.

Aug 30-2:09 PM

Poly reduction



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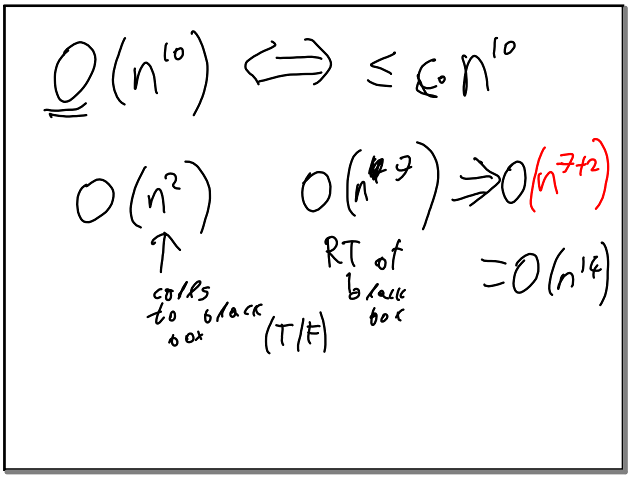
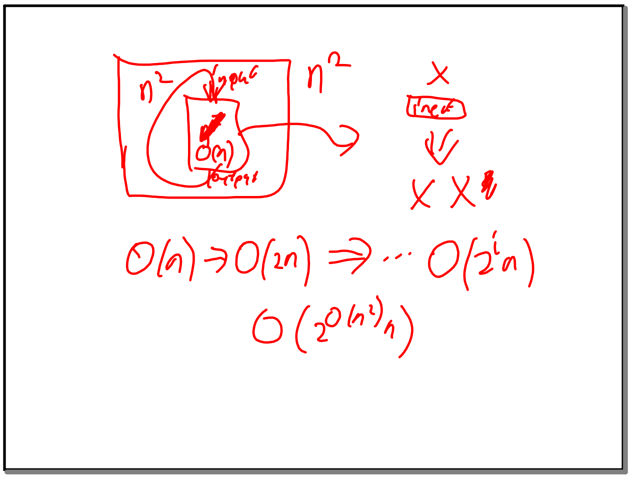


Aug 30-2:13 PM



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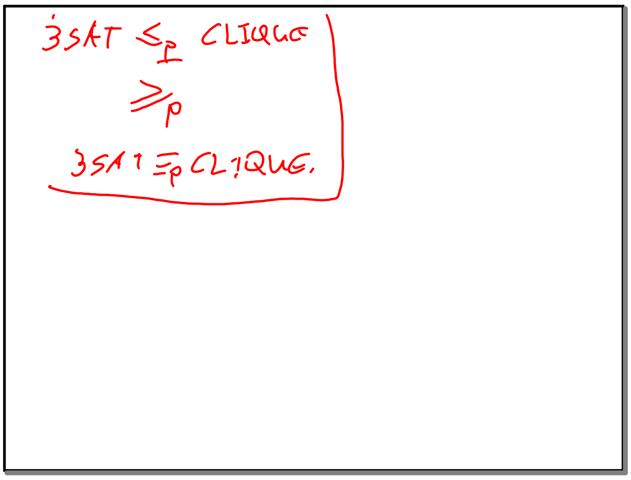

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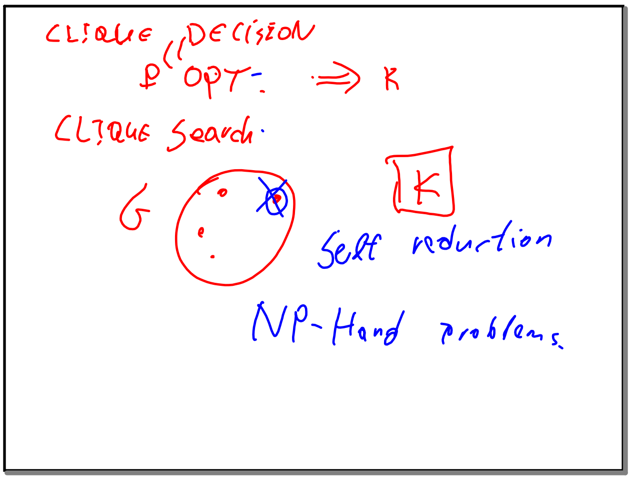
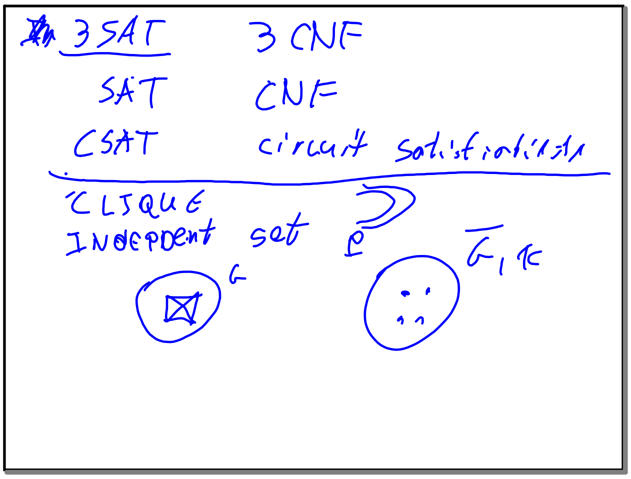
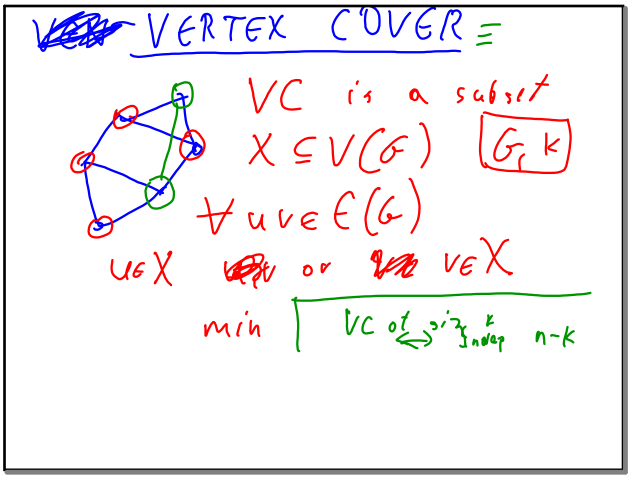


Aug 30-2:22 PM

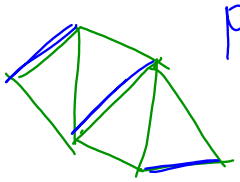


Aug 30-2:27 PM



Aug 30-2:33 PM

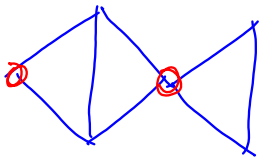
EDGE COVER



Polynomial time solvable !

Aug 30-2:36 PM

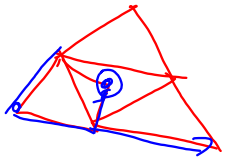
Dominating Set



G, K

Aug 30-2:39 PM

Hamiltonian Cycle/PATH



G

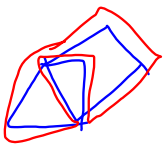
3SAT $\leq_p$ HC

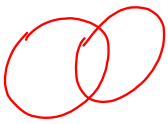
Aug 30-2:40 PM

EULERIN CYCLE

edges

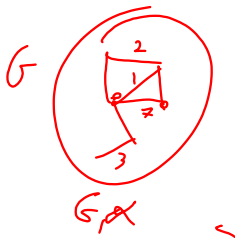
O(n+m)





Aug 30-2:43 PM

TSP



G, α

Is there a Hamiltonian cycle s.t. the cost of the cycle is at most α.

Aug 30-2:46 PM

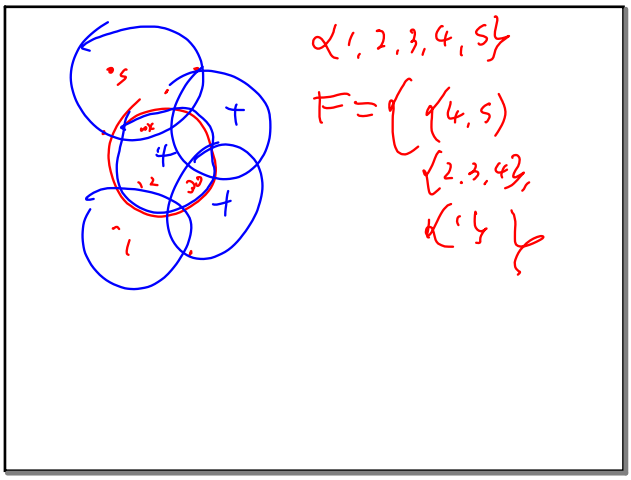
SET COVER

$(S, F), K$ $\quad F \subseteq 2^S$

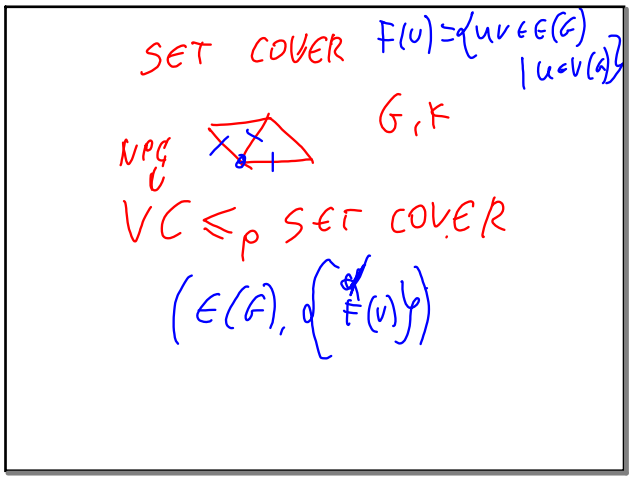
$(\{1,2,3,4\}, \{\{1,2\}, \{3,4\}, \{1,3\}, \{1\}\})$

K=2

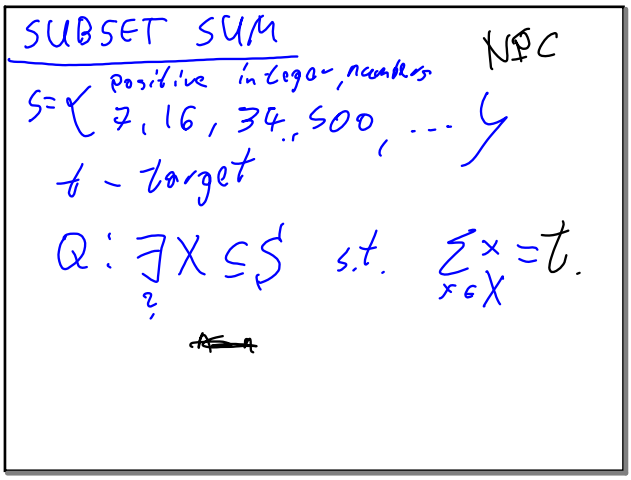
Aug 30-2:51 PM



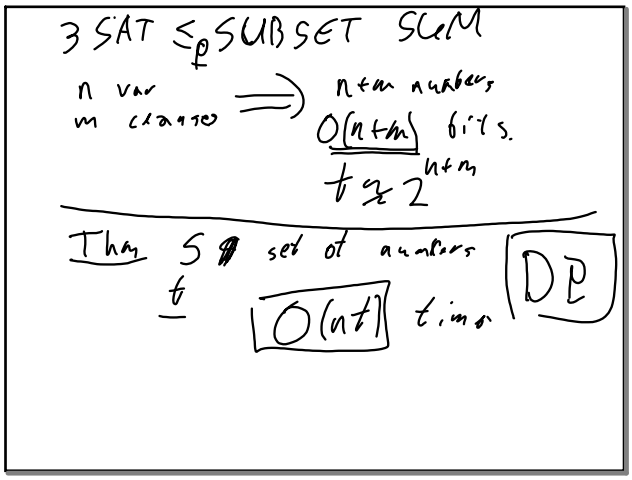
Aug 30-2:54 PM



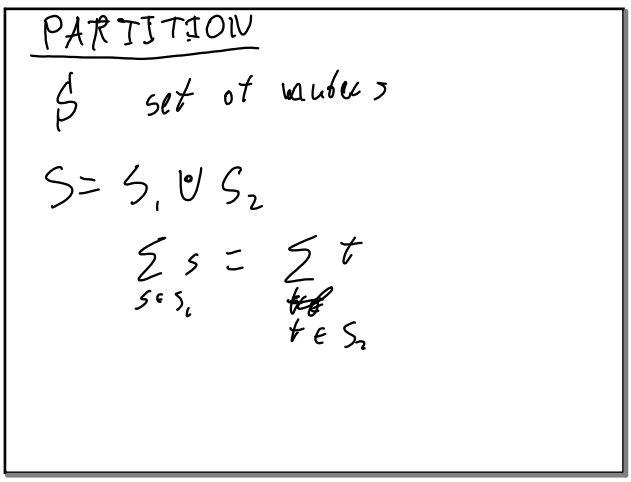
Aug 30-2:55 PM



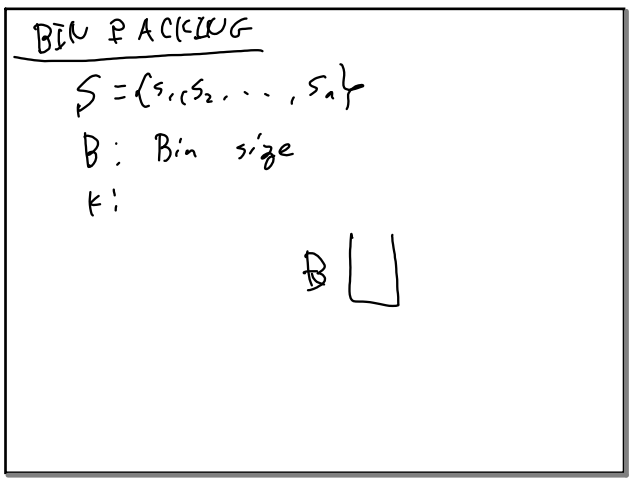
Aug 30-2:59 PM



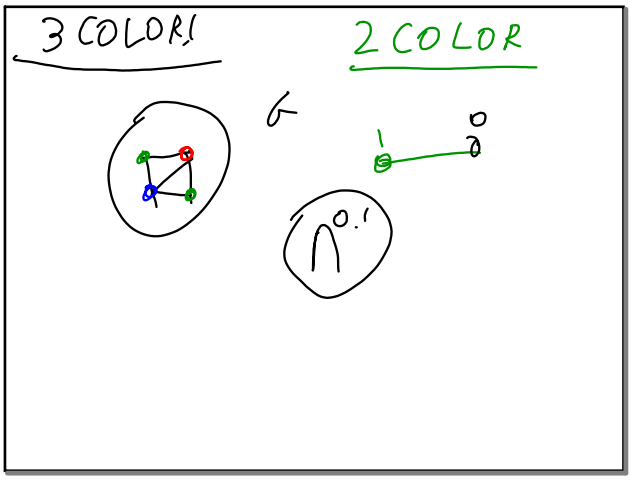
Aug 30-3:02 PM



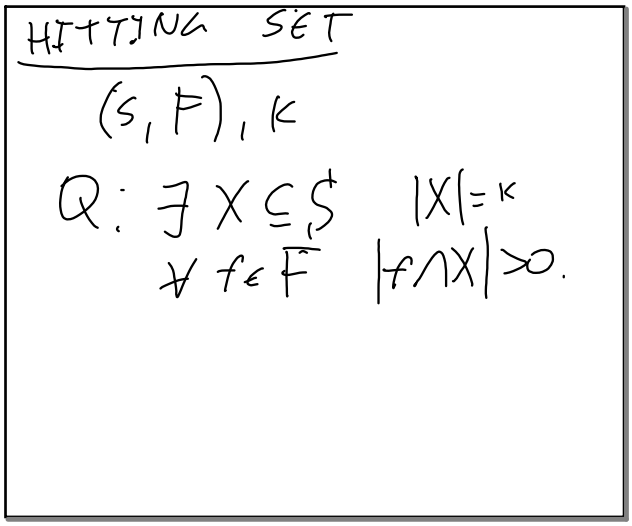
Aug 30-3:05 PM



Aug 30-3:06 PM



Aug 30-3:08 PM



Aug 30-3:13 PM