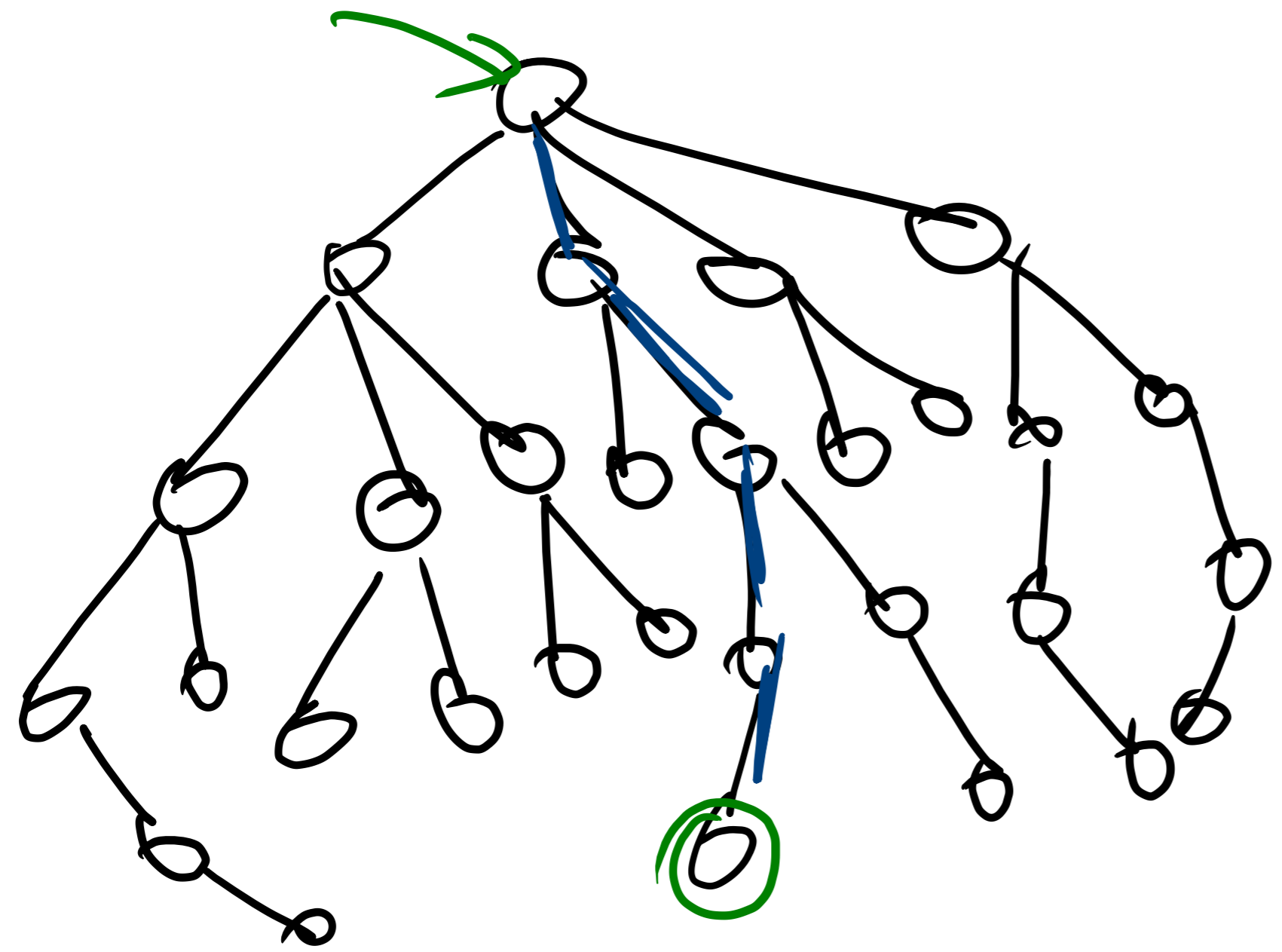
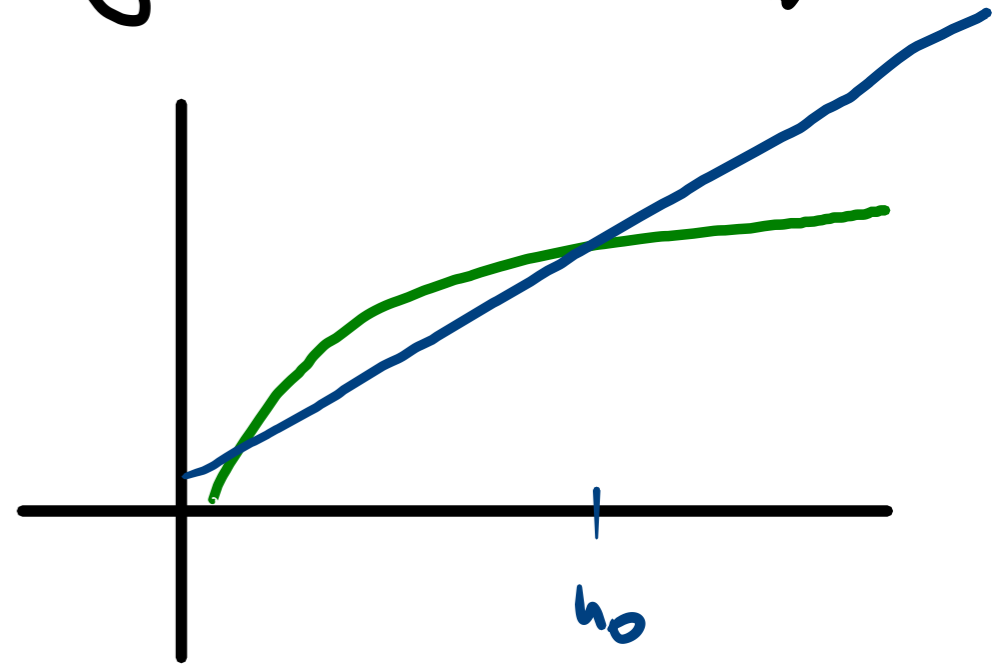


P = řešení v polynomiální čase

$$(\log n \in O(n))$$

NP = lze v polynom. čase ověřit řešení

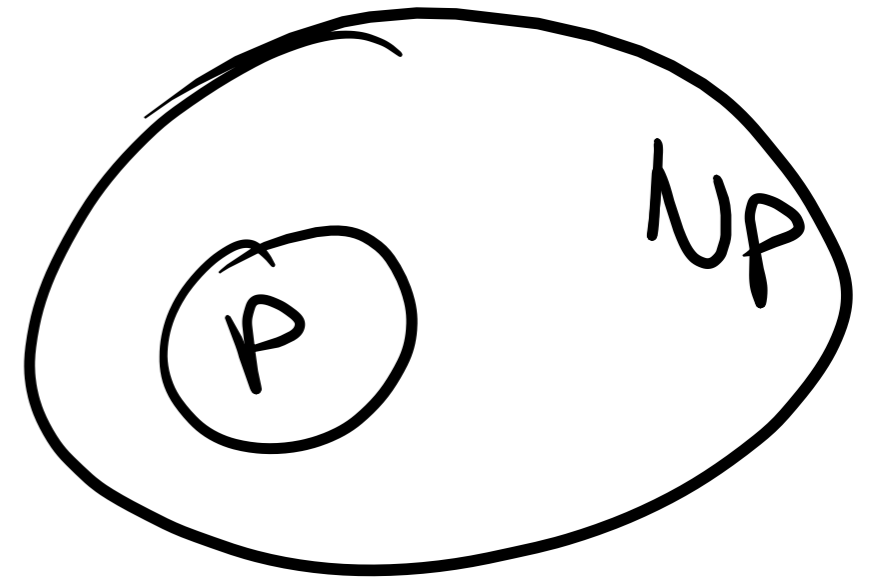
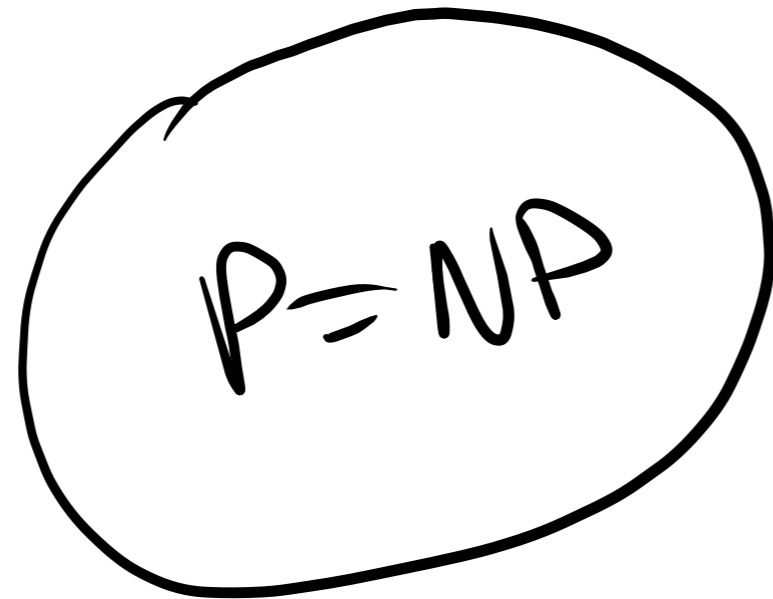


3  
2  
3  
8  
5  
cor  
3

$P \cup NP$

$P = NP$

$P \neq NP$

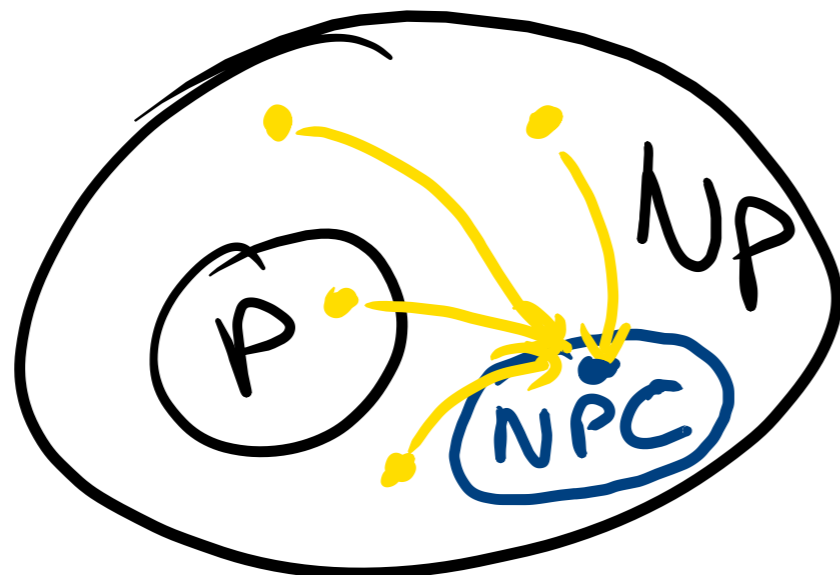


NP-igényes problémák

(NPC)

(NPC)

↳ helyettesítés NP



$\gamma \stackrel{?}{\in} NPC$

①  $\gamma \in NP$

②  $\exists X \in NP$

= polynomiális redukció

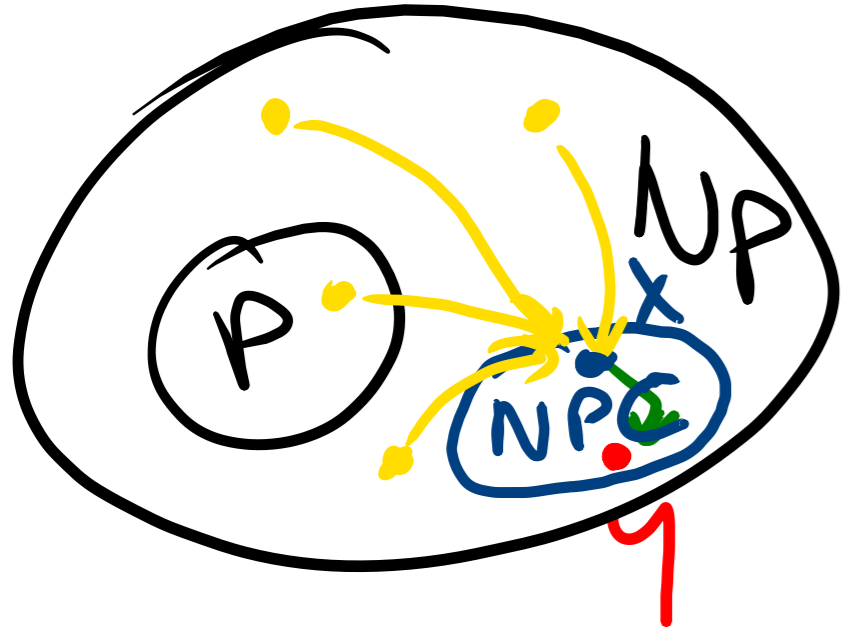
$\exists \leq_P : X \leq_P \gamma$

$\gamma \in NPC$

①  $\gamma \in NP$

②  $\exists x \in NPC : x \leq_p \gamma$

$\Rightarrow \gamma \in NPC$



SAT (=splnlnost)

$x, y, z = \text{v\u010dovina prave\u0161t}$

$$F = \underbrace{(x \wedge y \vee z)}_A \vee z \quad \vee \quad B$$

$$(x \wedge y \vee z \vee 1) \vee 1 = 1$$

$(\in \{0, 1\})$

$$x = 0$$

$$y = 0$$

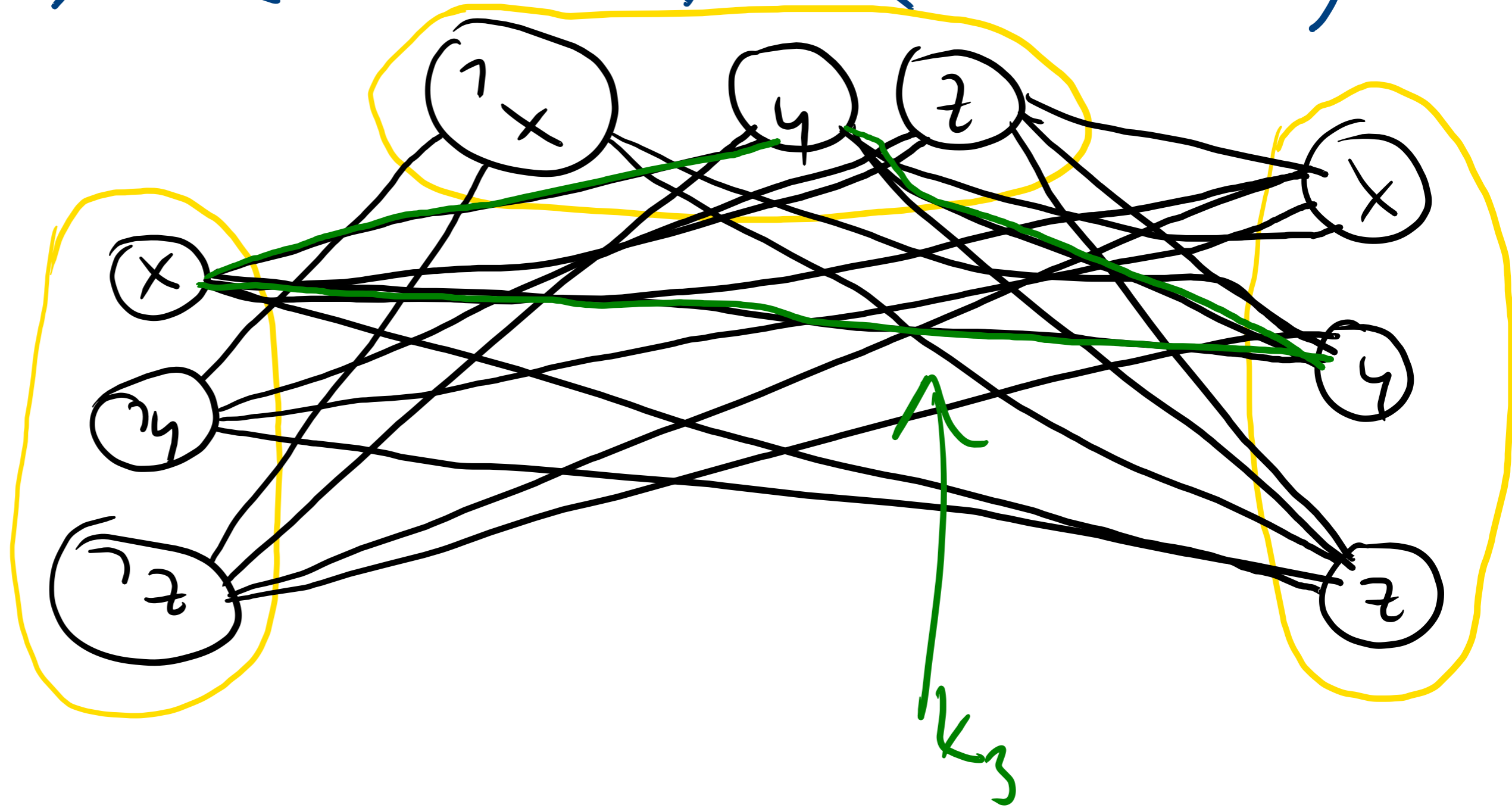
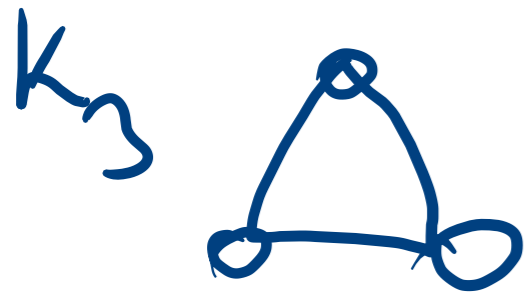
$$z = 1$$

| A | B | $A \wedge B$ | $A \vee B$ |
|---|---|--------------|------------|
| 0 | 0 | 0            | 0          |
| 0 | 1 | 0            | 1          |
| 1 | 0 | 0            | 1          |
| 1 | 1 | 1            | 1          |

3-SAT

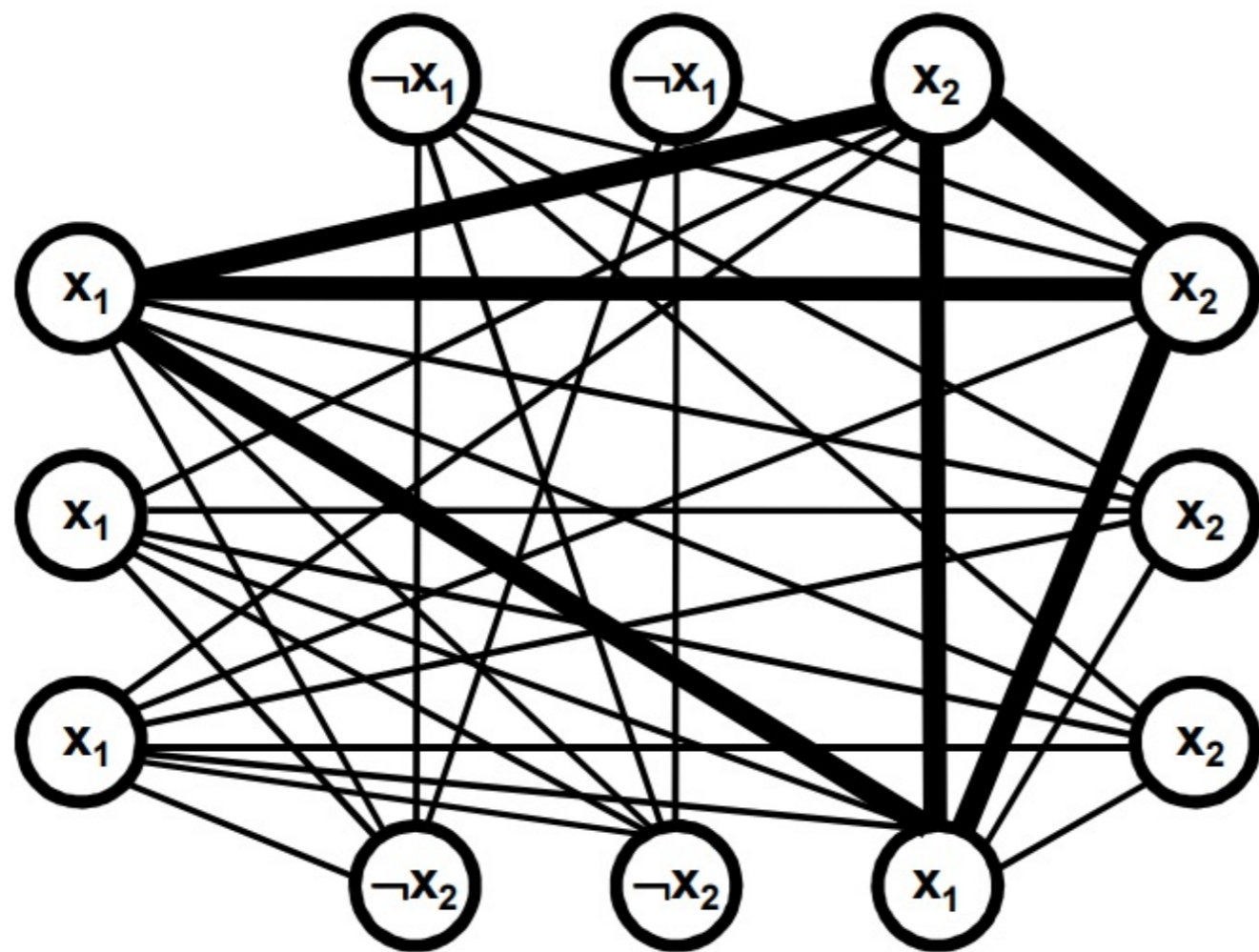
$$F = (\overset{1}{x} \vee \neg y \vee \neg z) \wedge (\neg x \vee y \vee z) \wedge (\overset{1}{x} \vee y \vee z)$$

k-CLIQUE



$$(x_1 \vee x_1 \vee x_1) \wedge (\neg x_1 \vee \neg x_1 \vee x_2) \wedge$$

$$(x_2 \vee x_2 \vee x_2) \wedge (\neg x_2 \vee \neg x_2 \vee x_1)$$



VINTÉ: 3-SAT ENPC

3-SAT  $\leq_p$  k-CLIQUE

k-CLIQUE  $\in$  NP

$\rightarrow$  k-CLIQUE ENPC