

1) Demostramos que es NP
 $O(X^P)$

2) Seleccionamos un problema
NPC conocido

3) Hacemos la reducción desde
el problema conocido.

1) $SAT \rightarrow 3SAT$ $X-SAT$ $X \geq 3$

2) $3SAT \rightarrow IP$ (prog-Entero)

3) $3SAT - VC$

4) $VC - Clique$

Cosas en común

$A \rightarrow B$

$$A \leq_p B$$

$$I(A) \longrightarrow I(B)$$

$O(n^x)$ Polynomial

n n^2 n^2 $n \log(n)$ etc

$n \rightarrow \nrightarrow \text{contrad}$

$$1) I^+(A) \xrightarrow{\text{SI}} I^+(B) \xrightarrow{\text{SI}}$$

$$2) I^-(A) \xrightarrow{\text{No}} I^-(B) \xrightarrow{\text{No}}$$

1) Una reducción de complejidad $O(3^n)$ ¿es válida?

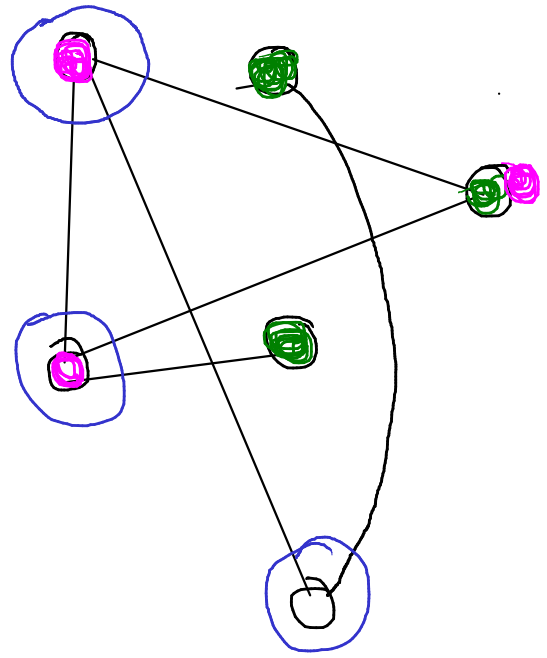
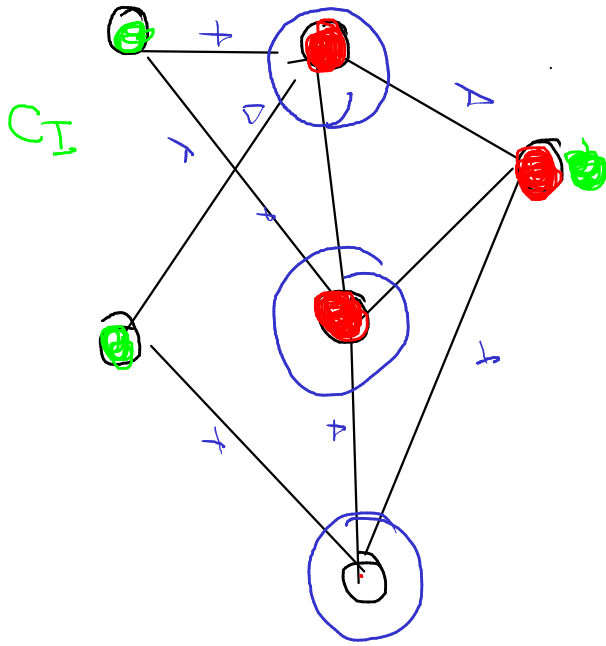
R/ No, porque No es polinomial

2) Se puede hacer reducción de $A \rightarrow B$, suponiendo $\underline{B \leq_p A}$

No, $\rightarrow A \leq_p B$

$G \quad VC \rightarrow MC$

\overline{G}



$CI = 3$

$MC = 3$

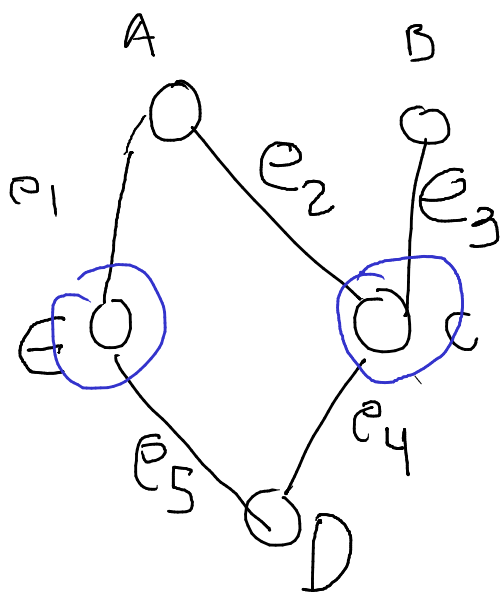
$MC = 3$

$CI = 3$

$MC = \text{Máximo Clique}$

Reducción de dos pasos.





| | 4^4 | 4^3 | 4^2 | 4^1 | 4^0 |
|---|-------|-------|-------|-------|-------|
| | e_1 | e_2 | e_3 | e_4 | e_5 |
| A | 1 | 1 | 0 | 0 | 0 |
| B | 0 | 0 | 1 | 0 | 0 |
| C | 0 | 1 | 1 | 1 | 0 |
| D | 0 | 0 | 0 | 1 | 1 |
| E | 1 | 0 | 0 | 0 | 1 |

VC \rightarrow Partición
 Tamaño clique (Subset-sum)

$$t = 2 \times 4^5 + \sum_{j=0}^4 2 \times 4^j = 2730$$

$$X_E = 4^5 + 4^4 + 4^0 = 1281$$

$$X_C = 4^5 + 4^3 + 4^2 + 4^1 = 1108$$

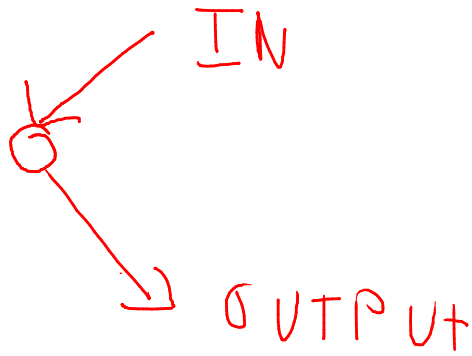
$$\{4^4, 4^3, 4^2, 4^1, 4^0\} \leftarrow \text{Aristas}$$

e_1, e_2, e_3, e_4, e_5

$$X_A + X_C = 2389$$

$$2389 + 4^4 + 4^3 + 4^2 + 4^1 + 4^0 = 2730$$

Ciclo Hamiltoniano



3-SAT \rightarrow Subst + Sum

3-SAT \rightarrow VC

$$V = \{v_1, v_2, v_3, v_4\}$$

$$C = \{ \{v_1, v_3, \bar{v}_4\}, \{v_2, v_3, v_4\} \}$$

$$v_1 = V$$

$$v_2 = V$$

$$t = K_1 y^{|\epsilon|} + \sum_{j=0}^{|\epsilon|-1} 2x y^j$$

$$t = 10x y^{16} + 2 \sum_{j=0}^{15} y^j \quad \nearrow$$

$$t = 10x y^{16} + 2 \left(\frac{y^{16} - 1}{y - 1} \right)$$

$$A = y^{16} + y^{15} + y^{14}$$

$$C = y^{16} + y^8 + y^7$$

$$F = y^{16} + y^1$$

$$H = y^{16} + y^9 + y^0$$

$$L = y^{16} + y^{14} + y^{12} + y^{10}$$

$$M = y^{16} + y^{11} + y^{10} + y^9$$

$$N = y^{16} + y^{13} + y^{12} + y^{11}$$

$$\bar{I} = y^{16} + y^8 + y^4 + y^3$$

$$\bar{J} = y^{16} + y^6 + y^5 + y^4$$

gristors

$$\left\{ \begin{array}{l} y^0 \\ y^1 \\ y^2 \\ \vdots \\ y^{15} \end{array} \right.$$

$$K = y^{16} + y^5 + y^3 + y^2$$

