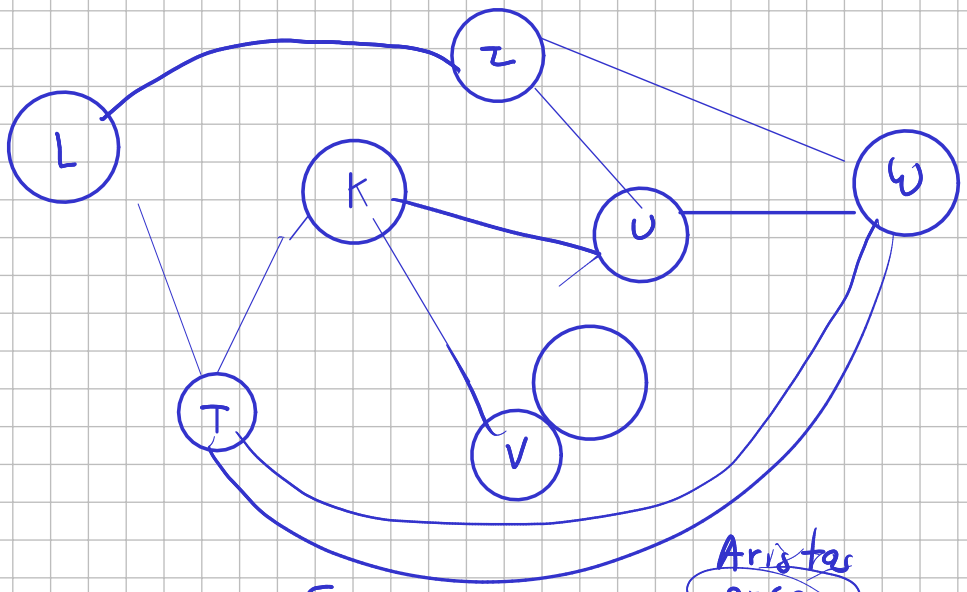
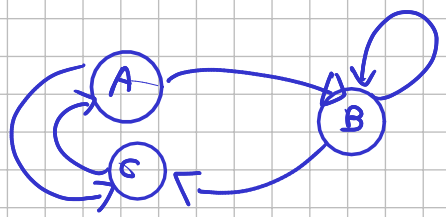


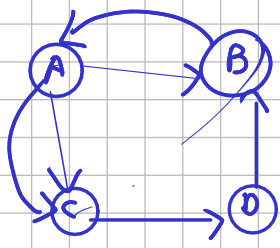
Vértices
Nodos

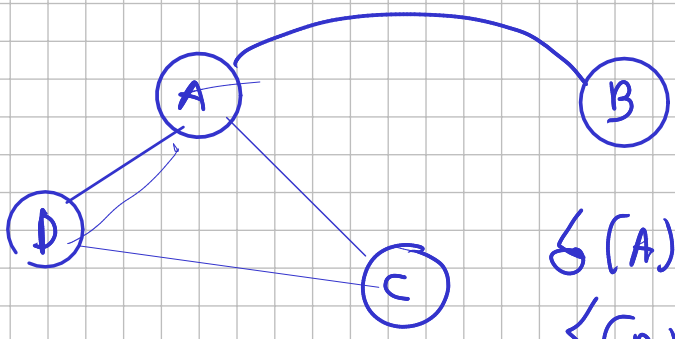
Aristas
arcos

No dirigido { Simples
Multigrafos
Pseudografo



Dirigidos { Grafo dirigido
Multigrafo dirigido





Grado ✱ aristas vértice incidentes

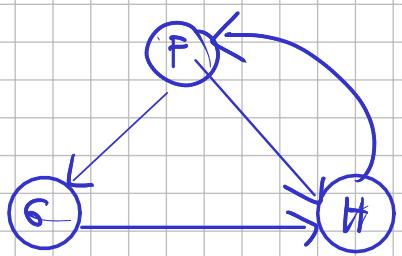
$\delta(A) = 3$

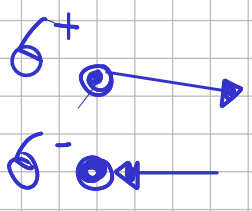
$\delta(B) = 1$

$\delta(C) = 2$

$\delta(X)$

$\delta(D) = 2$





$\delta^+(F) = 2$ $\quad \delta^-(F) = 1$

$\delta^+(G) = 1$ $\quad \delta^-(G) = 1$

$\delta^+(H) = 1$ $\quad \delta^-(H) = 2$

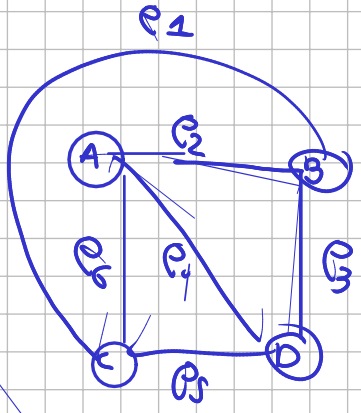
Dos vertices son ADYACENTES o VECINO Sii hay una arista que los UNE

Un arista es INCIDENTE a un vértice cuando esté se encuentra en uno de sus extremos (hace parte de la arista)

Teorema de Handshaking

No dirigido

$$2e = \sum_{v_i \in V} \delta(v_i)$$



$\delta(A) = 3$

$\delta(B) = 3$

$\delta(C) = 3$

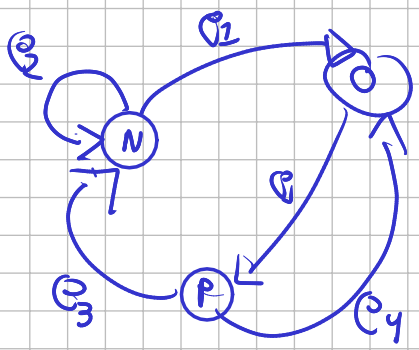
$\delta(D) = 3$

$\sum 12$

$e = 6$

Dirigidos

$$e = \sum_{v_i \in V} \delta^+(v_i) = \sum_{v_i \in V} \delta^-(v_i)$$



$\delta^-(N) = 2$

$\delta^-(O) = 2$

$\delta^-(P) = 1$

5

$\delta^+(N) = 2$

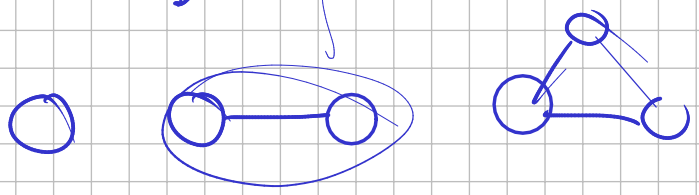
$\delta^+(O) = 1$

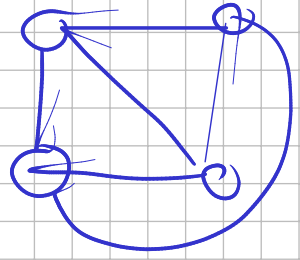
$\delta^+(P) = 2$

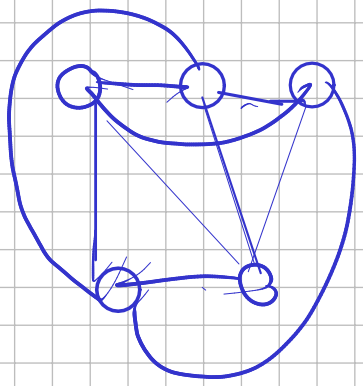
5

Familias de grafos simples

1) Completo K_n



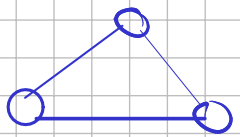




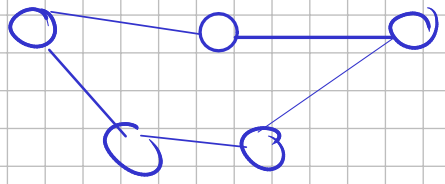
$\delta(v_i) = (n-1)$

$2e = n(n-1)$ $\quad e = \frac{n(n-1)}{2}$

2) Ciclo C_n



$n \geq 3$

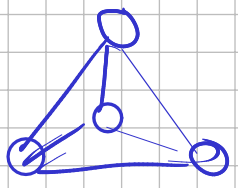


$\delta(v_i) = 2$

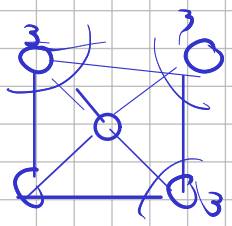
$2e = 2n$ $\quad \boxed{e = n}$

3) Rueda (Rosen)

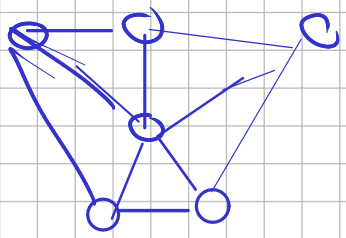
Es un Cn al cual le hemos añadido un vértice que se conecta con los demás.



W_3



W_4



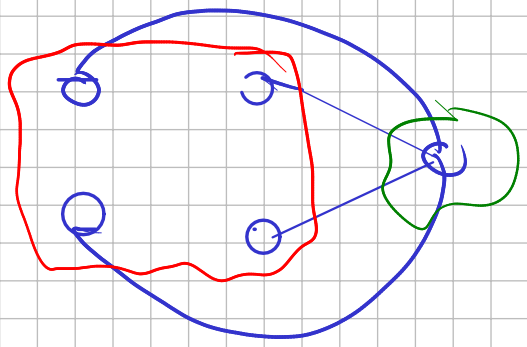
W_5

W_n $\begin{cases} n+1 \text{ vertices} \\ 2e = n + 3n \quad 2e = 4n \quad \boxed{e = 2n} \end{cases}$

$\uparrow$

n

Bipartito

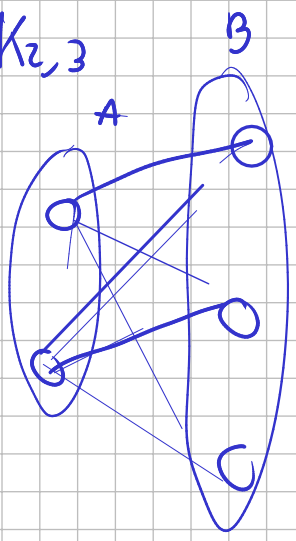


$K_{1,3}$

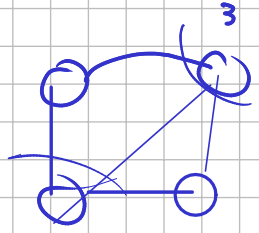
$K_{n,m}$ $\quad n \wedge m \geq 1$

Bipartito completo

$K_{2,3}$



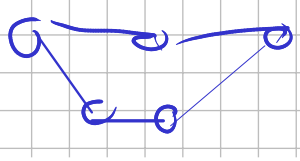
Secuencia de grado



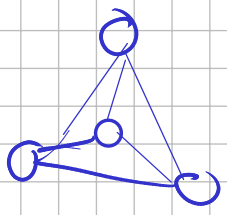
$\{3, 3, 2, 2\}$

$K_n = \underbrace{\{n-1, n-1, \ldots, n-1\}}_{n \text{ veces}}$

$C_n = \underbrace{\{2, 2, 2, \ldots, 2\}}_{n \text{ veces}}$



$W_n = \{n, \underbrace{3, 3, 3, \ldots 3}_{n \text{ veces}}\}$



$K_{n,m} = \{\underbrace{m, m, m, m, \ldots, m}_{n \text{ veces}}, \underbrace{n, n, n, n}_{m \text{ veces}}\}$

$2e = nm + mn \quad 2e = 2nm$

$\boxed{e = nm}$

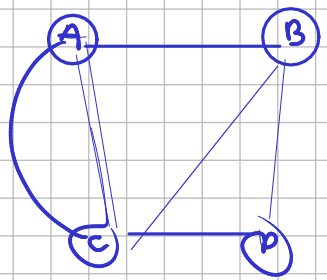
Subgrafos

$G(V, E)$

$H(V_1, E_1)$ es subgrafo de G

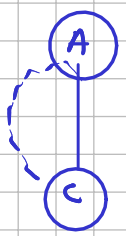
Si $V_1 \subseteq V$ y $E_1 \subseteq E$

G

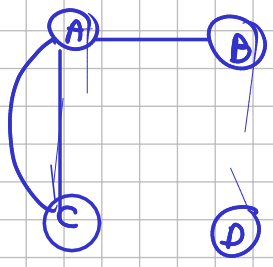


H_1

H_2



H_3



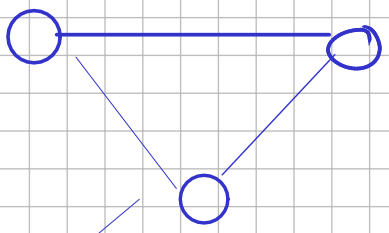
Inducido

TOma un subconjunto de los vertices y TODAS las aristas que son INCIDENTES a estos

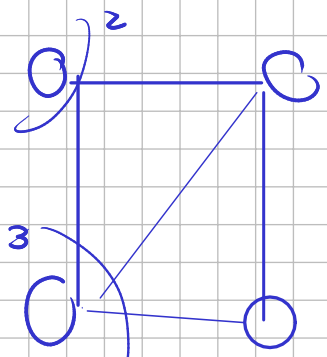
Recubridor

Todos los vertices.

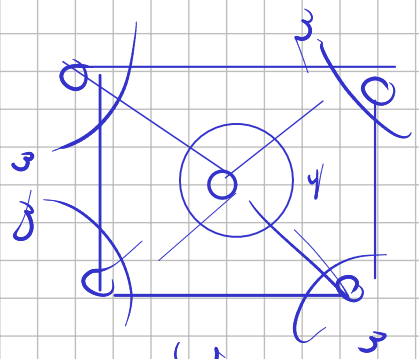
Regular: Todos los vertices TIENEN el mismo GRADO.



Grafo regular



N_0



W_4