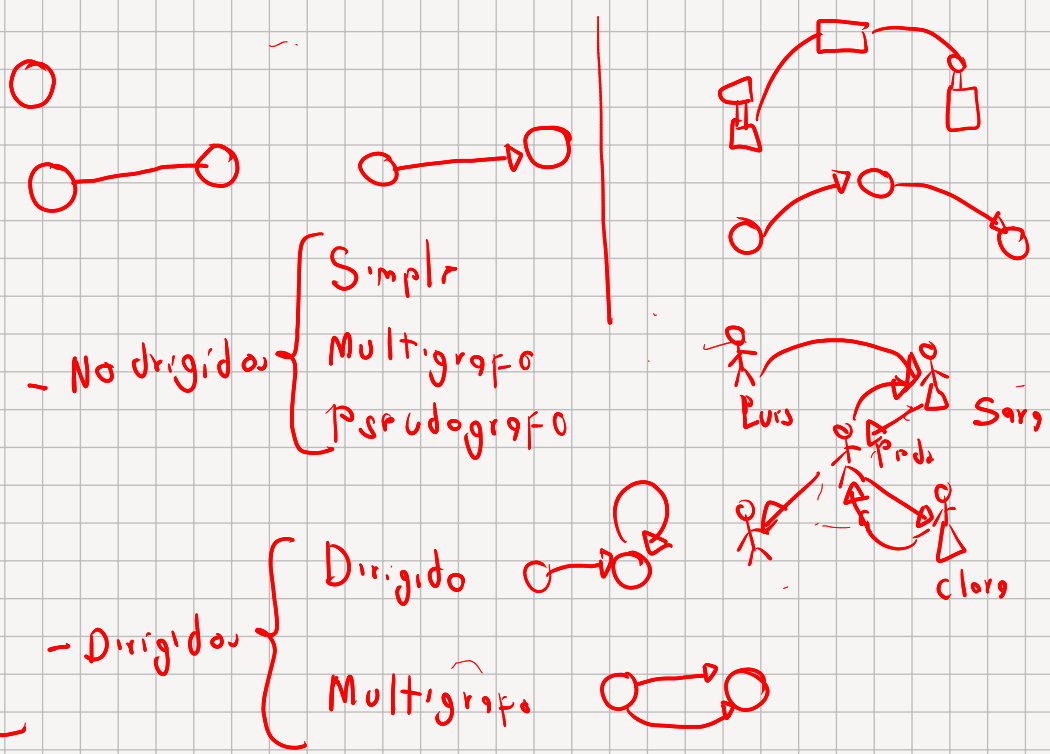


Grafos

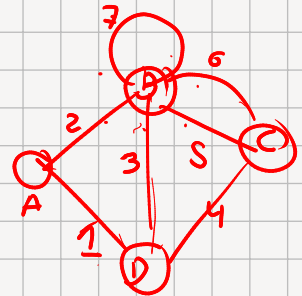
Tipos



Teorema HandShaking

No dirigidos

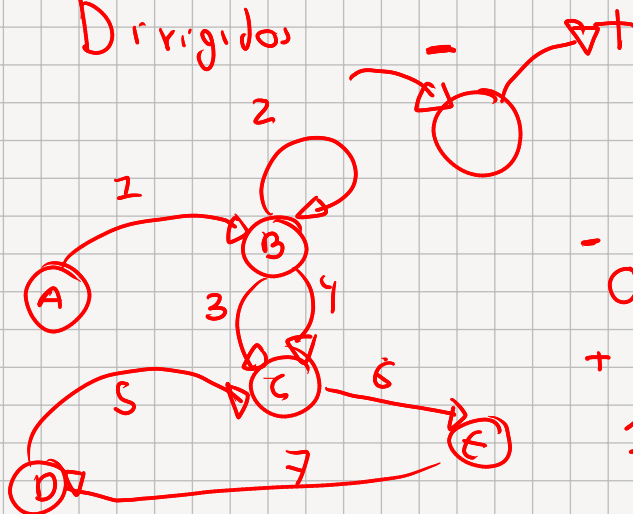
$$2e = \sum_{v \in V} \deg(v)$$



$$2e = 2 + 6 + 3 + 3$$

$$2e = 14 \quad \boxed{e = 7}$$

Dirigidos

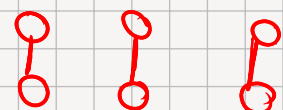


$$\sum_{v \in V} \deg^-(v) = \sum_{v \in V} \deg^+(v) = e$$

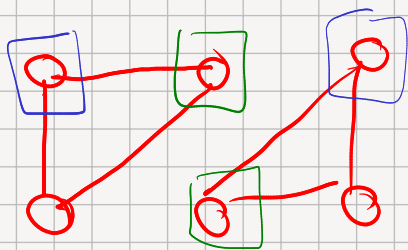
$$0 + 2 + 3 + 1 + 1 + 1$$

$$+ 1 + 3 + 1 + 1 + 1 + 1 \rightarrow 7$$

Seis personas, y cada persona le da la mano a exactamente a otra persona del grupo ¿Cuántos saludos se hicieron?



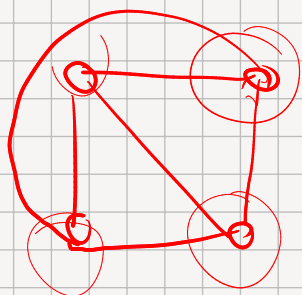
Dos



Familias grafos SIMPLES

K_n grafo completo = Cada vertice está conectado con los demás

K_4



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

$$K_n = (n-1) + (n-1) + \dots + (n-1)$$

$$2e = n(n-1)$$

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

$$e = 18$$

grafo regular grado 3

$$2e = \sum \deg(v)$$

$$2e = 3x$$

$$2 \times 18 = 3x$$

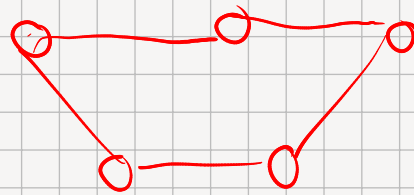
$$2e = \underbrace{3 + 3 + \dots + 3}_{x \text{ veces}}$$

$$2 \times 18 = 3x$$

$$2 \times 6 = x$$

$$12 = x$$

Círculo C_n



$$2e = 2 + 2 + 2 \dots + 2$$

$\underbrace{\hspace{10em}}_{n \text{ vertices}}$

$$2e = 2n$$

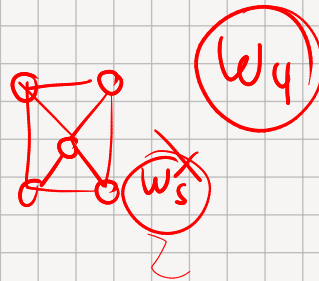
$$e = n$$

Rueda =

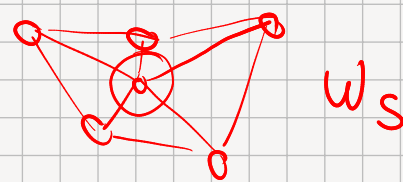
Rosca

W_n es un C_n que le hemos un vertice que une los demás.

W_n $n-1, 1$



W_n { vertices $n+1$
aristas

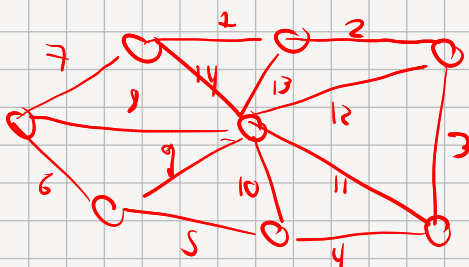


$$2e = 3n + n$$

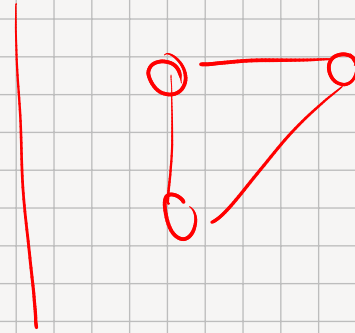
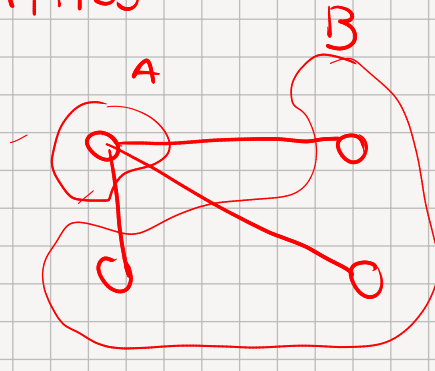
$$2e = 4n$$

$$e = 2n$$

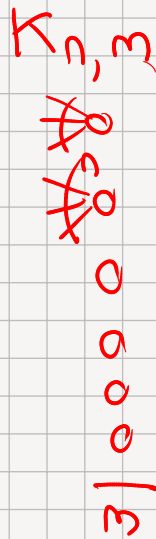
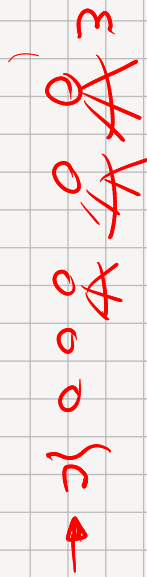
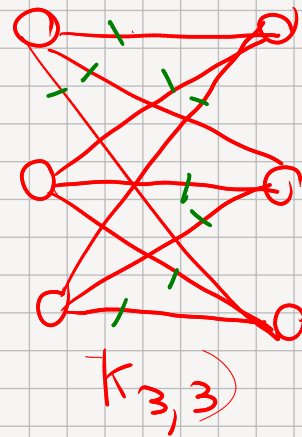
W_7



Bipartito



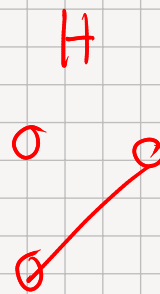
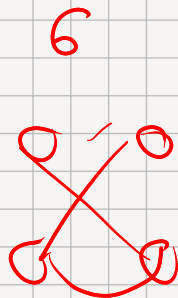
Bipartito completo



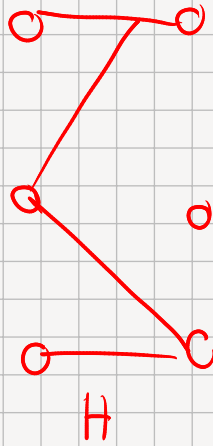
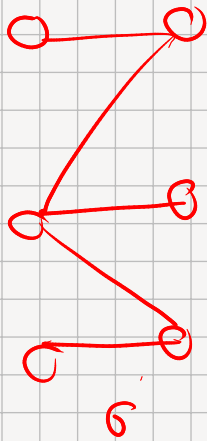
$$2e = nm + mn = 2e = 2mn$$

$$e = mn$$

Subgrafos

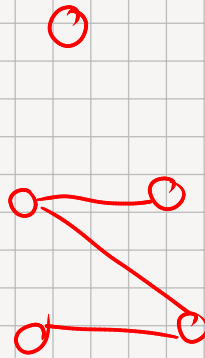
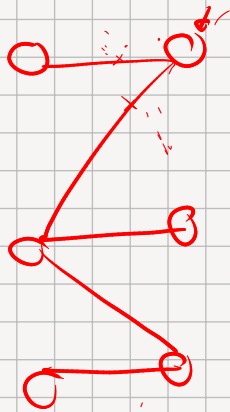


Recubridor



Mismo
Vertices

Inducido



Este grafo conserva TODAS
las aristas adyacentes