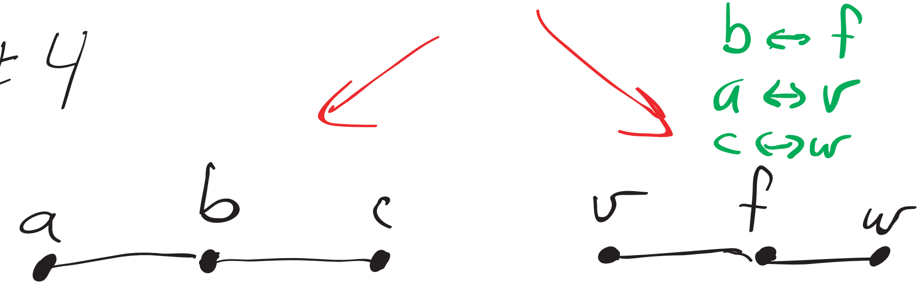
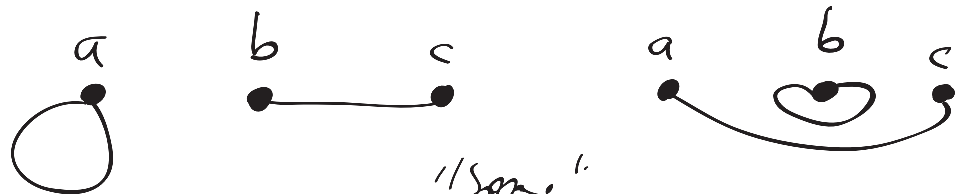
Wed. Lecture # 4

Counting graphs:



"Same"



"Same"

Not equal. $\{a,b,c\} \neq \{v,f,w\}$

V-set $\longrightarrow$ $\{\cancel{a}, \cancel{b}, \cancel{c}\}$ v, w, q | $\{\cancel{a}, \cancel{b}, \cancel{c}\}$ w, v, q | $\{v, w, q\}$

E-list: ~~aa, bc~~ ~~vv~~, wq, vv | ~~ac, bb~~ wq, vv

isomorphic.

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What is a 1-1 (1-to-1) corespondance?

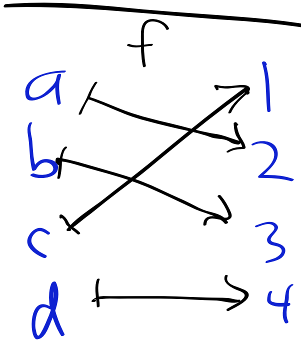
$S = \{a, b, c, d\}$, $T = \{1, 2, 3, 4\}$.

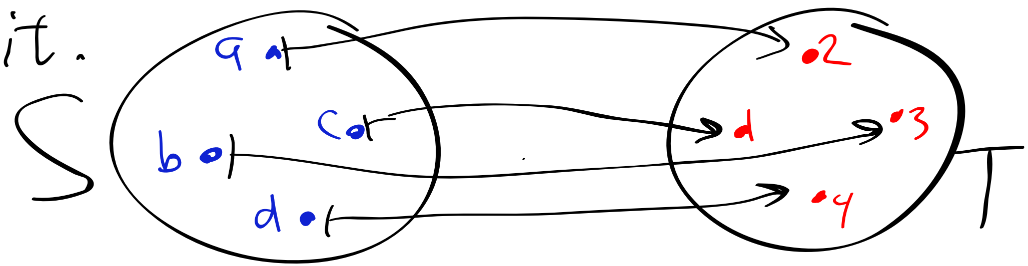
A one-to-one corespondance of S and T is a function from S to T (or T to S) that:

- never sends two elements to the same place;

and

- every element of T has one element sent to it.



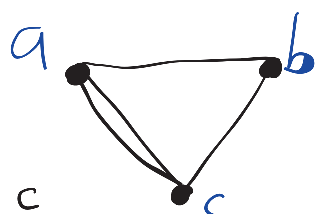


Def: Graphs G and H are *isomorphic* if there is a 1-1 correspondance between the vertex sets of G and H so that:

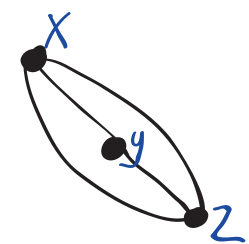
given any pair of vertices in G, the number of edges connecting them equals the number of edges connecting the corresponding pair in H.

Ex:

a — x
b — y
c — z



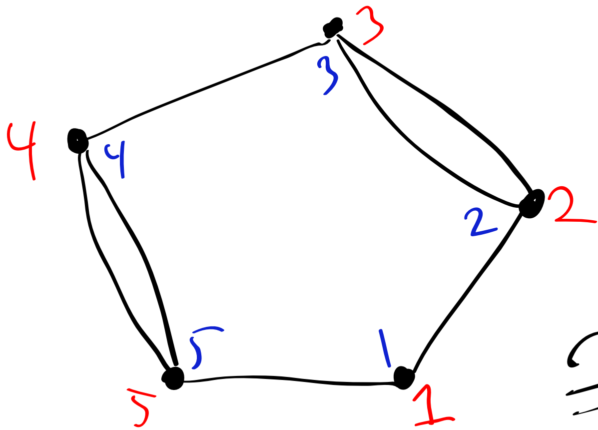
iso? yes



	a	b	c
a	0	1	2
b	1	0	1
c	2	1	0

⟵ same ⟶

	x	y	z
x	0	1	2
y	1	0	1
z	2	1	0



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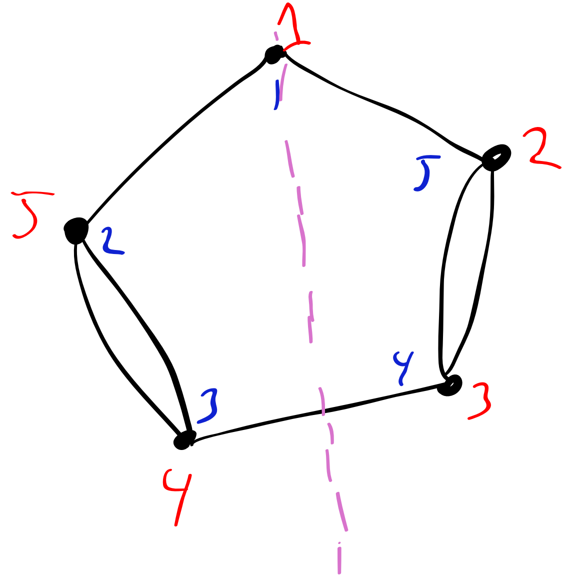
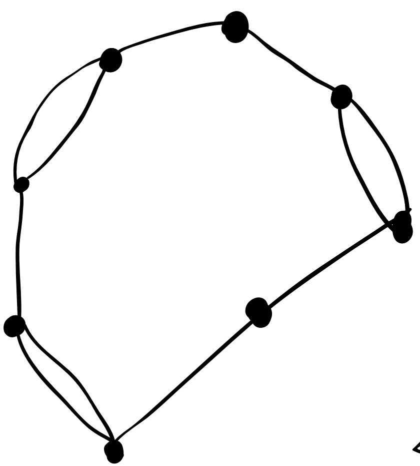
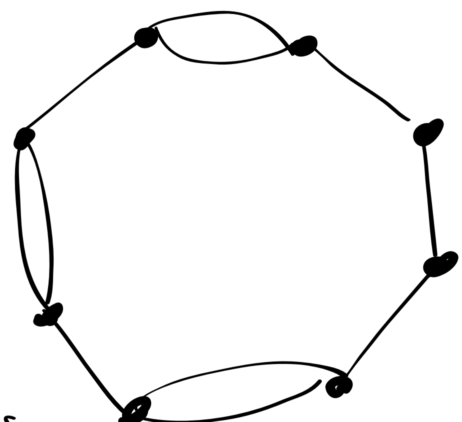


gaps between double edges are of "lengths" 1 and 2

≅ for isomorphic



≅ ?



Same gaps are now of lengths 1, 2, 2 on the left, and 1, 1, 3 on the right

degree sequences

2, 2, 3, 3, 3, 3, 3, 3

2, 2, 3, 3, 3, 3, 3, 3