Friday, Lecture 5 . Finishing Ch 1.

HW#2: 1.19, 1.20, 1.22, 1.23 (a)(b) (p28-29)
Due Friday, Feb 1.

To recap:

isomorphism.
diagram of a graph & set/list defn.
degree, degree sequence.
regular, simple, connected.

"How many truly different graphs are there, for a given number of vertices"

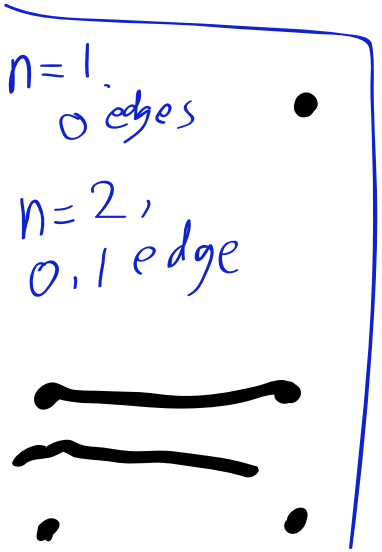
1 vertex:

Let's only count simple graphs.

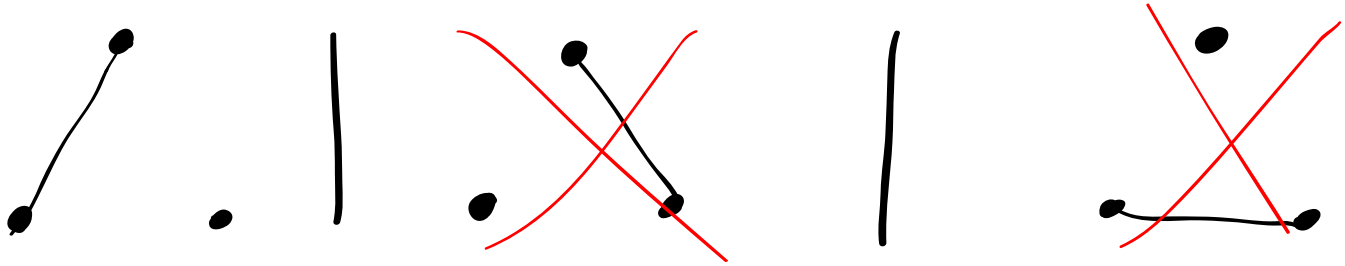
How many edges can a simple graph, with n vertices have?

$\equiv$ # of pairs of vertices.

$\frac{n(n-1)}{2}$, or any integer from here down to zero.



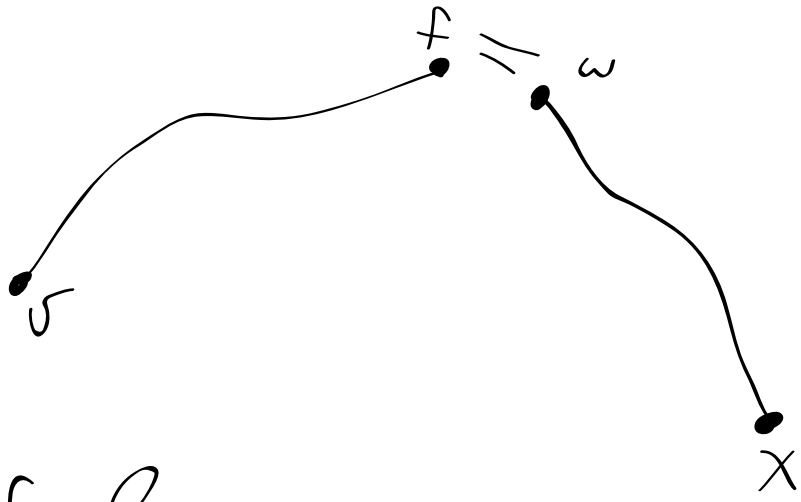
$n = 3$ | n = # of vertices | count non-isomorphic



Why is ↑ the only option, for $n=3$, $m=1$.

↗ rename these 2 vertices

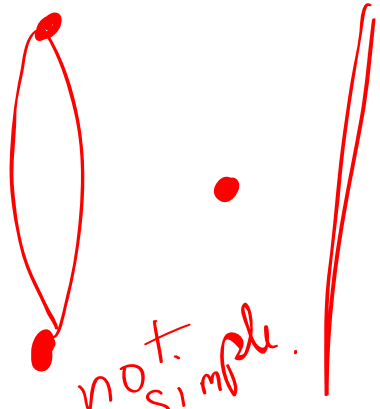
$n=3, m=2$

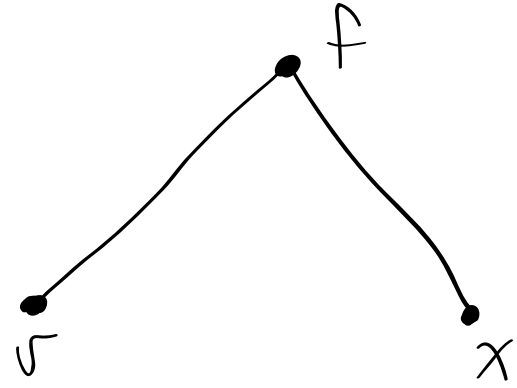


$v \neq f$ & $w \neq x$

need either $v=w$ or $f=w$, or $v=x$ or $f=x$.

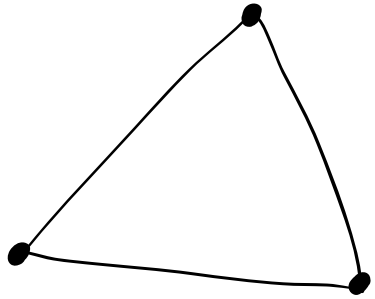
WLOG, $f=w$ ((ii))





Can $v=x$? no.

$n=3$, $m=3$



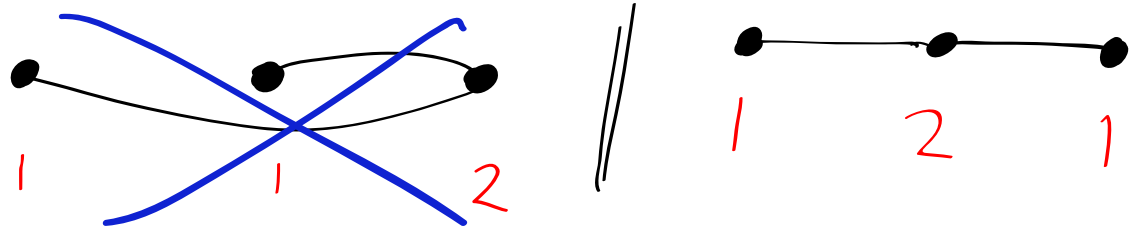
As n gets bigger, need more cases.

$n=4$, $m=3$. What are the possible degree sequences?

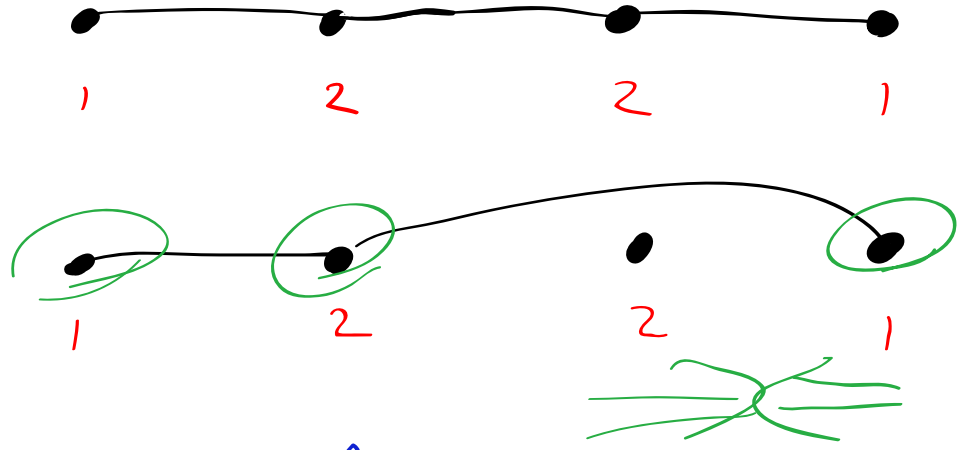
$a, b, c, d \mid 0 \le a \le b \le c \le d$, $a+b+c+d=6$

How many nonisomorphic simple graphs are there with degree sequence:

1, 1, 2:



1, 1, 2, 2:



Work out, at home:

1, 1, 2, 2, 2