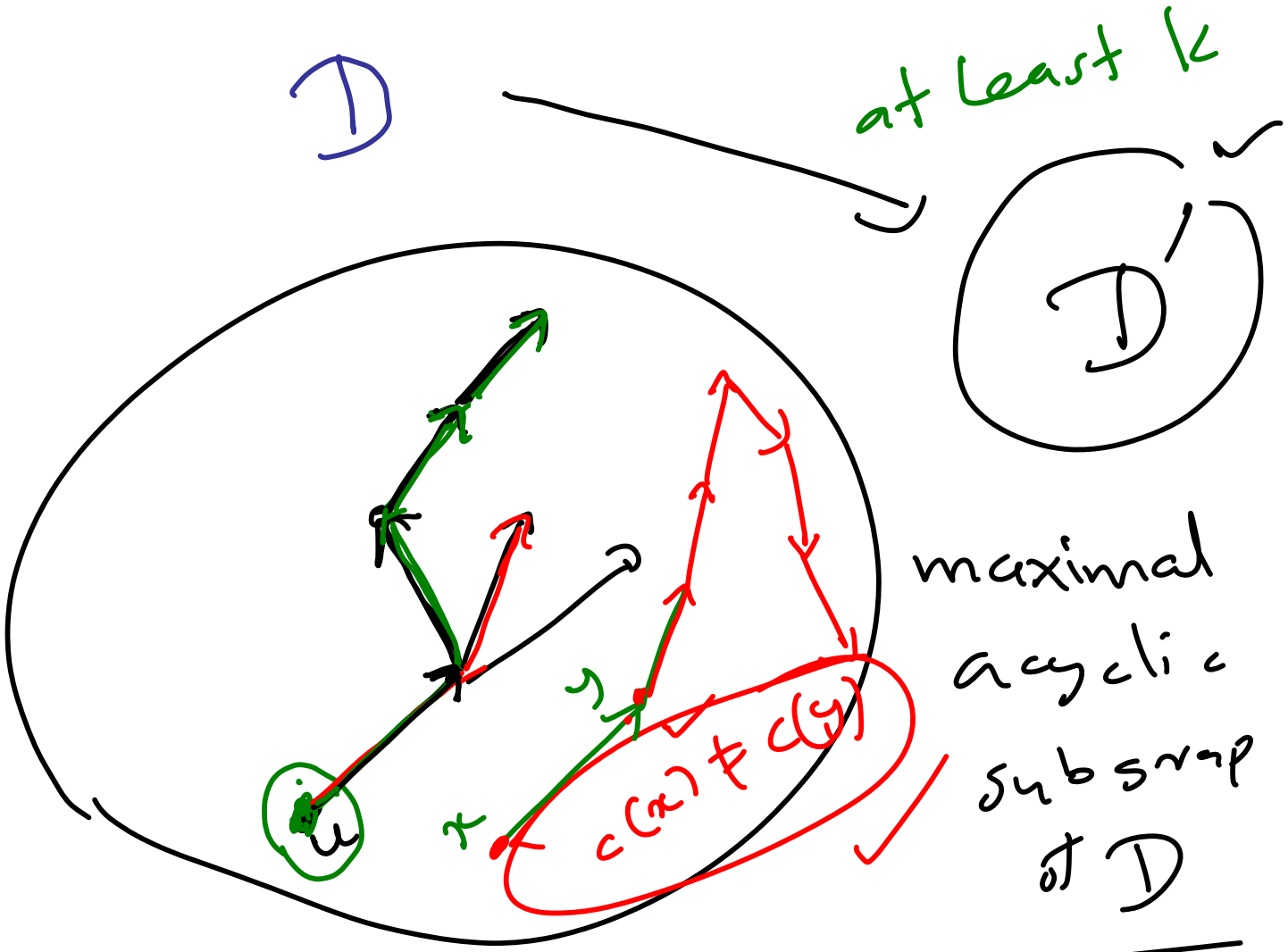
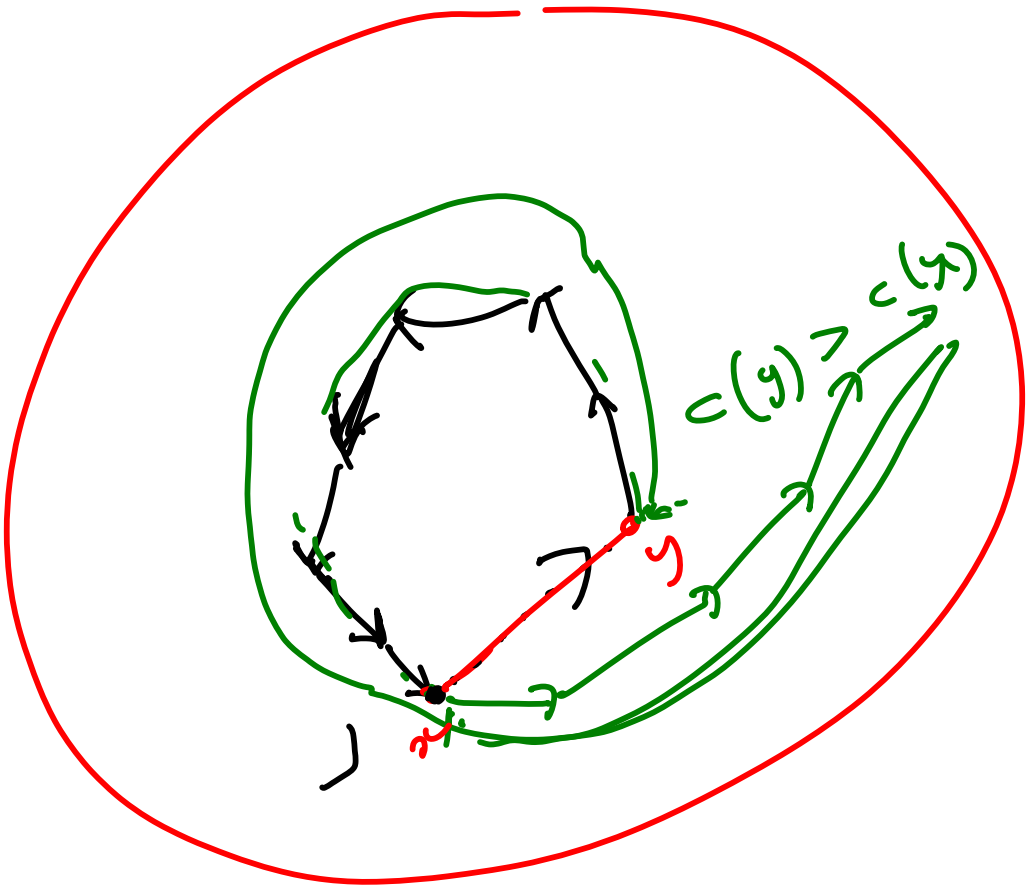
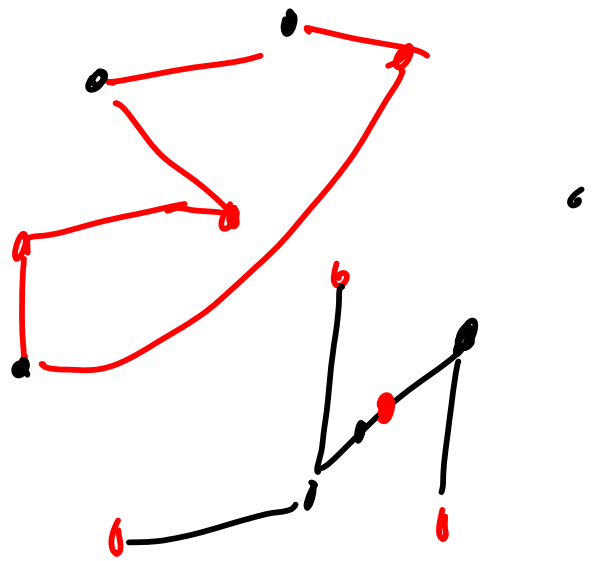
$\chi(D) = k$

at least k colors



maximal acyclic subgraph of D


c(y)
c(x)
y
x



$$\Delta \leq a'(G)$$

$$\Delta \leq \chi'(G) \leq a'(G)$$

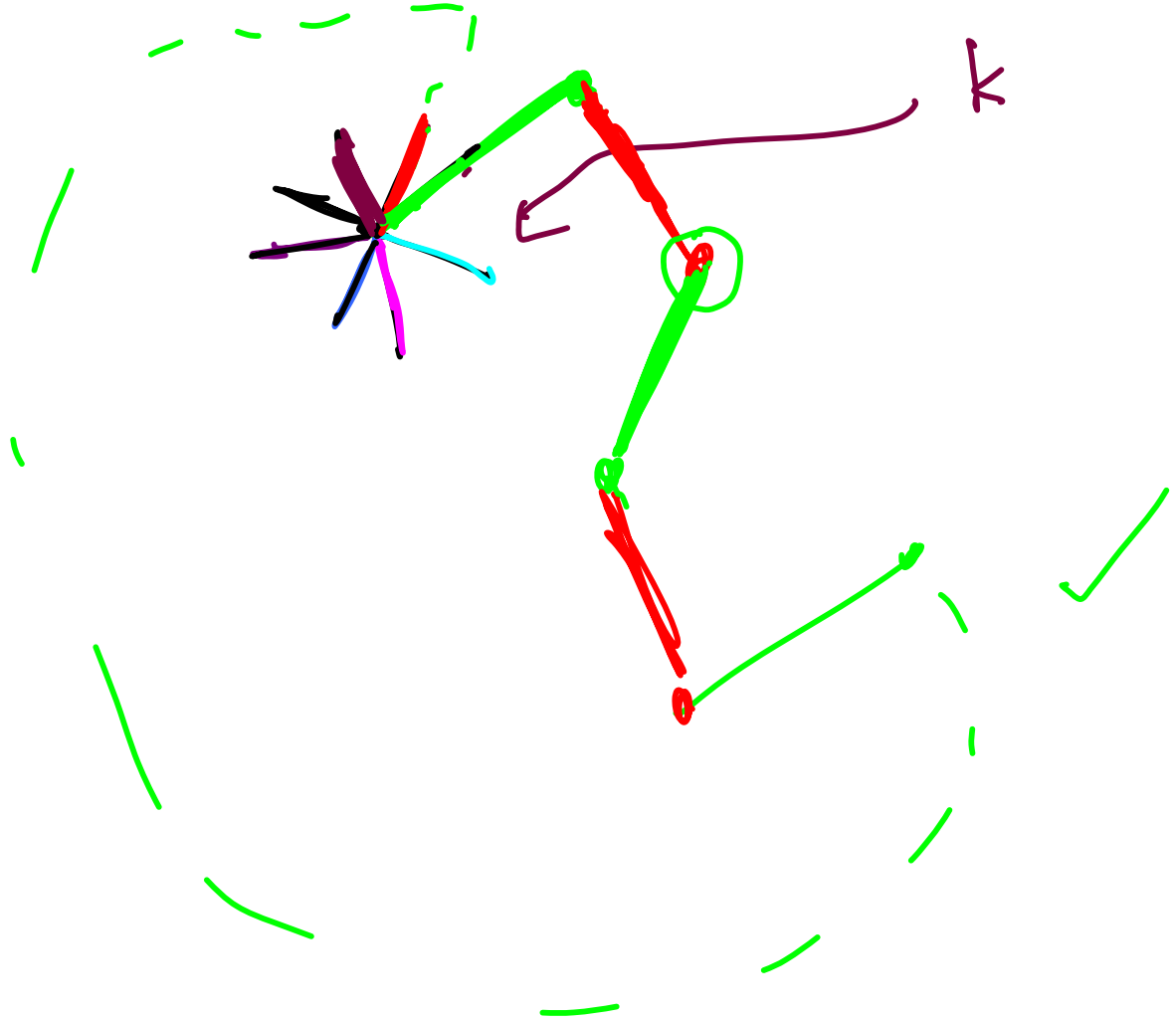
$$\Delta \leq \chi'(G) \leq \Delta + 1$$

$$a'(G) \leq \Delta + 2$$

k-regular,

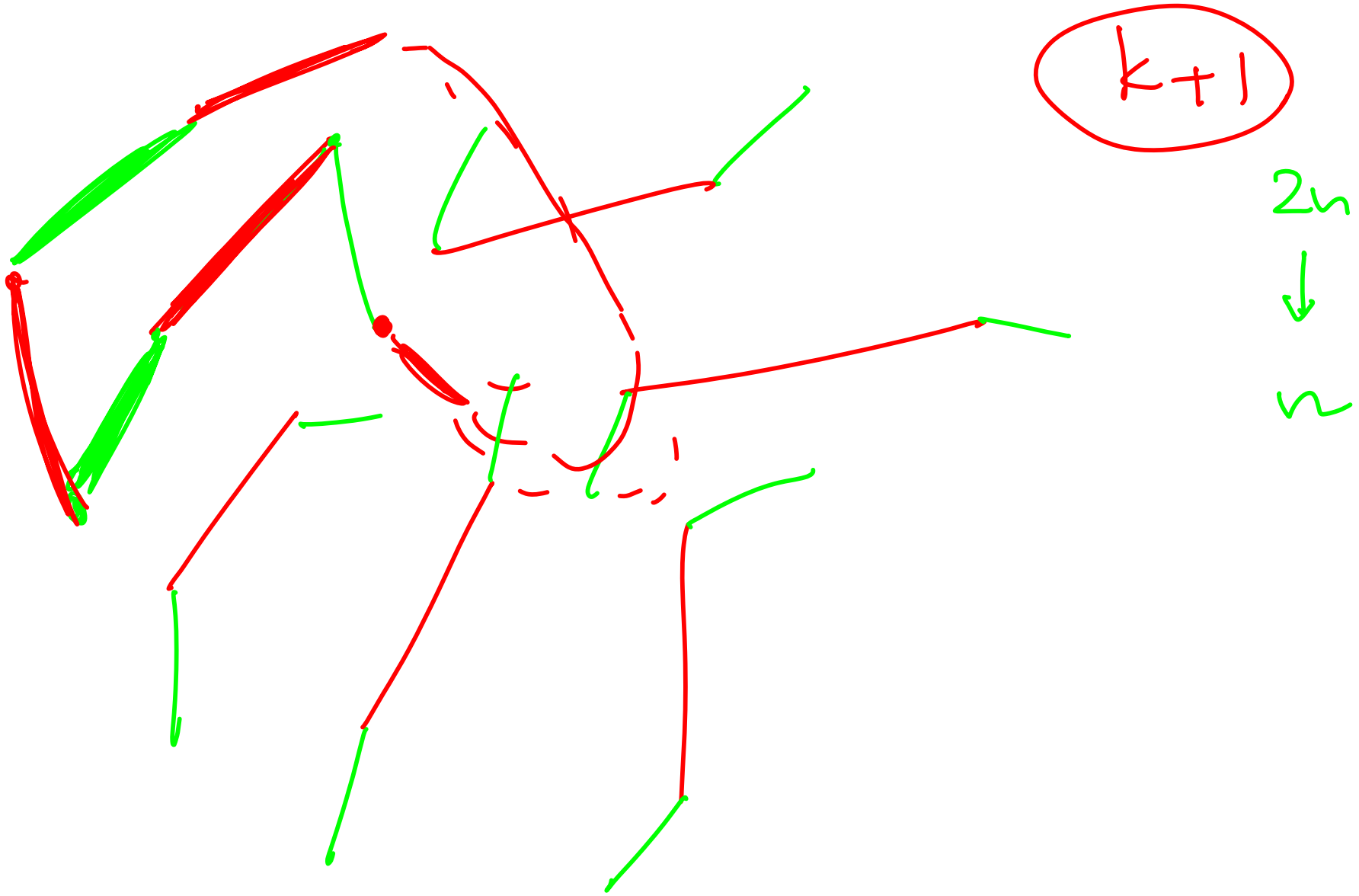
Δ-regular

$\Delta+1$ colors are required


k

Suppose G is a graph with $2n$ vertices. Then if G is a k-regular graph with $k > n$ then

$$a'(G) \geq k+2 = \Delta(G)+2$$


k+1
2n
n

n edges

$$\frac{2n \cdot k}{2} = kn$$

at most $n-1$ edges in remaining

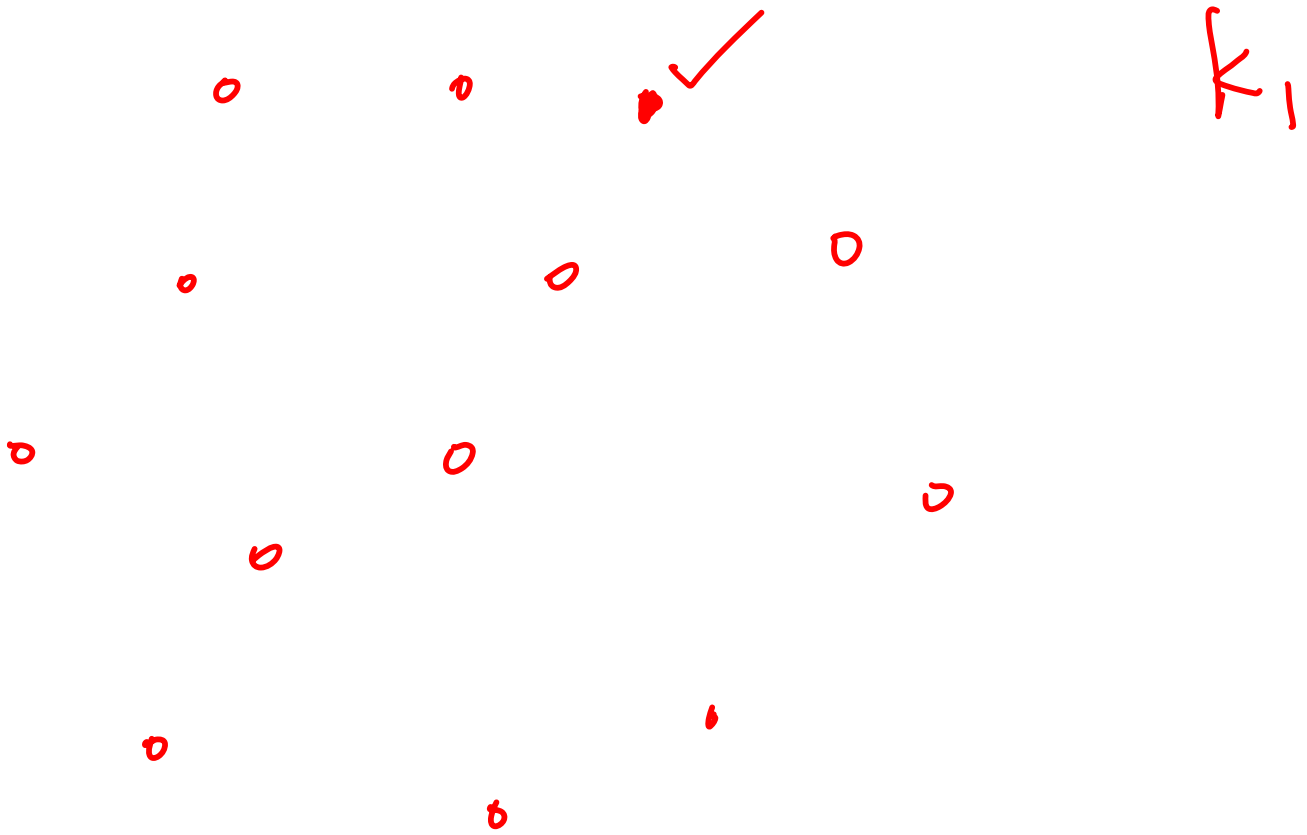
$$n + k(n-1) = kn + (n-k)$$

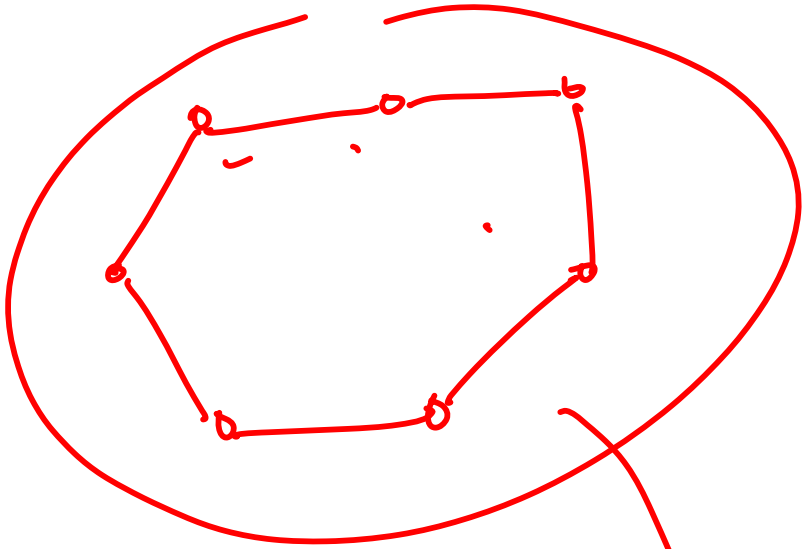
$k > n$

$< kn$

$$\frac{(kn + n - k)}{x} < \frac{(kn)}{x}$$

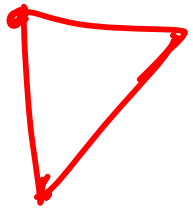
$$kn - (kn + n - k) = x$$


k1

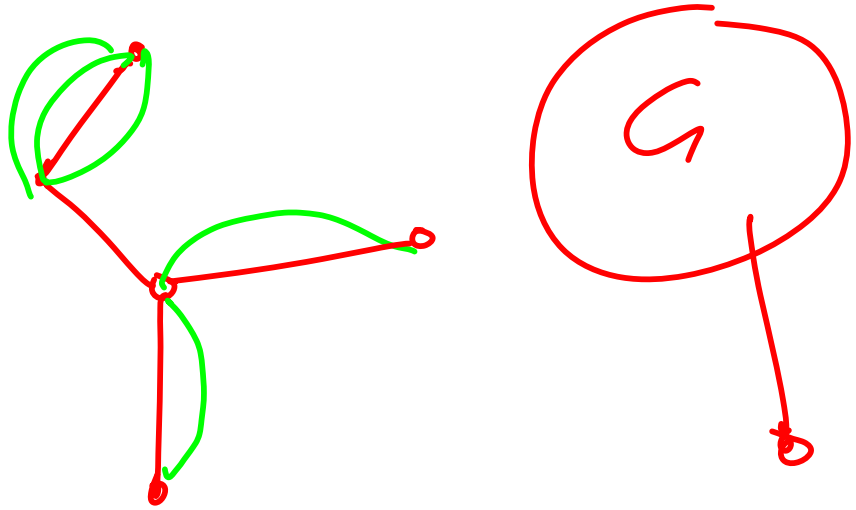


K_2

K_3 minor?

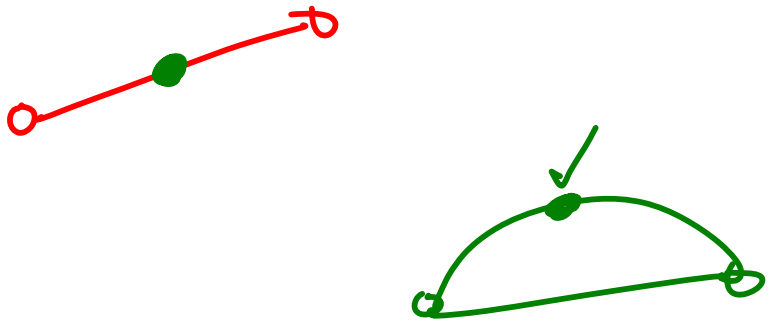


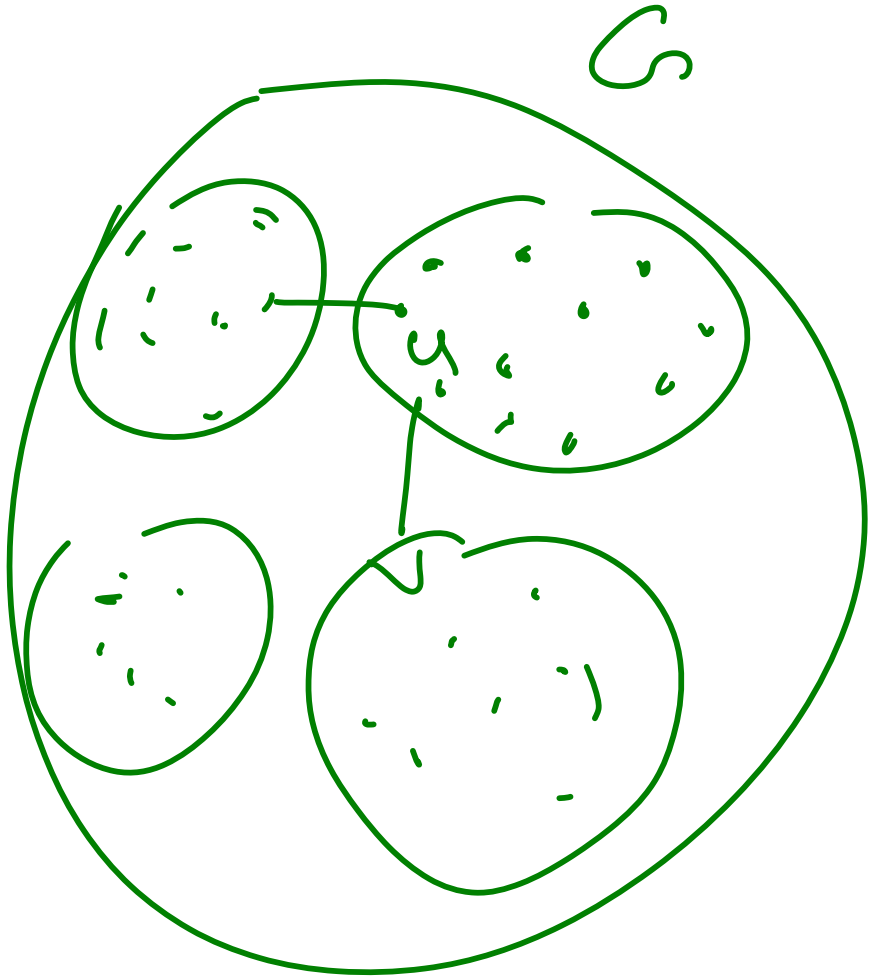
(1) Add a pendent vertex



(2) Add a parallel edge

(3) ~~Sel~~ Do a series operation





$f : V(G) \to V(H)$

H

$f(u) - f(v)$