Pa K
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Hamiltonicity

Def'n Hamiltonian path (non repeating vertices)
Hamiltonian cycle
Hamiltonian graph

Thm $w_1, \ldots w_r \in V(G)$ s.t. $G \setminus \{w_1, \ldots w_r\}$ has at least $r+1$ connected components. Then G does not contain H. c.

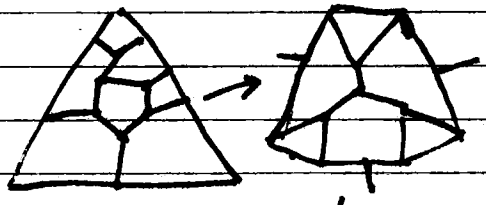
Pf Don't even write it ✓

(history from EGT p 143)

Def'n $c(G)$ = length of longest cycle in G

Thm $c(G) < n^{1-\varepsilon}$ some $\varepsilon > 0$
$\exists G$ 3-conn cubic planar w/ $|V(G)| = n$ s.t. ↑
for n arb. large

Pf use Tutte's gadget



etc.

Keep iterating gadget construction, always satisfy hypothesis, but w/ in each gadget must omit one sub-gadget ✓