Graph Theory: Lecture No. 12

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Every graph $G$ contains a cycle of length at least $\delta(G) + 1$, provided $\delta(G) \geq 2$. 
Every graph $G$ with at least one edge has a subgraph $H$ with $\delta(H) > \epsilon(H) \geq \epsilon(G)$. 
There is a function $h : \mathbb{N} \to \mathbb{N}$ such that every graph of average degree at least $h(r)$ contains $K_r$ as a topological minor, for every $r \in \mathbb{N}$. 
Let \( f(k) = h(3k) + 2k \). Then every \( f(k) \)-connected graph is \( k \)-linked for all \( k \in \mathbb{N} \).
Let $G$ be a graph and $k \in N$. If $G$ is $2k$-connected and $\epsilon(G) \geq 8k$, then $G$ is $k$-linked.