1. Find a set $S$ for Theorem 2.2.3 when $G$ is a forest.

2. Show that a graph $G$ contains $k$ independent edges (i.e. edges which share no vertex) if and only if $q(G \setminus S) \leq |S| + |G| - 2k$ for all sets $S \subseteq G$.

3. Using only Theorem 2.2.3, show that a $k$-connected graph with at least $2k$ vertices contains a matching of size $k$. Is this the best possible?