第 1 次作业题

第 1 题

阅读并总结第 1 章([2], Alexander Schrijver,2013)

第 2 题

Let $G = (V, E)$ be a graph and let $l : E \to \mathbb{R}$ be a 'length' function. Call a forest F *good* if $l(F') \geq l(F)$ for each forest F' satisfying $|F'| = |F|$.

Let F be a good forest and e be an edge not in F such that $F \cup \{e\}$ is a forest and such that (among all such e) $l(e)$ is as small as possible. Show that $F \cup \{e\}$ is good again.

第 3 题

Let $G = (V, E)$ be a complete graph and let $l : E \to \mathbb{R}_+$ be a length function satisfying $l(uw) \geq \min\{l(uv), l(vw)\}$ for all distinct $u, v, w \in V$. Let T be a longest spanning tree in G.

Show that for all $u, w \in V$, $l(uw)$ is equal to the minimum length of the edges in the unique $u - w$ path in T.