Welcome Tutorial :-)
Tutorial 11

GAO Ming

SE & DaSE @ ECNU

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1. Set function f is submodular if and only if for all $A \subseteq V$ and $j, k \in V \setminus A$, we have $f(A \cup \{k\}) - f(A) \geq f(A \cup \{j, k\}) - f(A \cup \{k\})$. (second order difference)

2. Given a set V and $A \subseteq V$, let $f(A)$ be a submodular function, and $S \subset V$ be a fixed set. Prove that $f'(A) = F(A \cap S)$ is also a submodular.

3. Let $h(t)$ be a constant hazard function, i.e., $h(t) = \lambda$. Please calculate the survival function $S(t)$, density function $f(t)$, and cumulative probability function $F(t)$.