1. A monotone class $\mathcal{C}$ is one with the the property that if either $A_n \uparrow A$ or $A_n \downarrow A$ and $A_n \in \mathcal{C}$ for every n then $A \in \mathcal{C}$. A field $\mathcal{F}$ is a class that is closed under finite unions and complementation. It follows then it is closed under finite intersections as well. A σ field is a field that is closed under countable unions. Show that a field $\mathcal{F}$ is a σ-field if and only if it is a monotone class.

2. Show that if $\mathcal{F}$ is a field and $\mathcal{M}$ is a monotone class that contains $\mathcal{F}$, then $\mathcal{M}$ contains the σ-filed generated by $\mathcal{F}$.