1. Find (with proof) a function in $\mathcal{R}[a, b]$ that is not a uniform limit of step functions.
2. Suppose $\ell : \mathcal{P}(\mathbb{R}) \to [0, \infty]$. Show that ℓ is countably additive if and only if ℓ is finitely additive and countably subadditive.
3. Carothers 16.4
4. Carothers 16.12
5. Carothers 16.16
6. Carothers 16.22
7. Carothers 16.24
8. Carothers 16.25
9. Carothers 16.28