

HOMEWORK 2
STA703.01, Advanced Probability
Fall Semester, 2015

Due: Thurs September 17th, 2015

- 1** If μ_1, \dots, μ_n are measures on a σ -algebra \mathcal{F} over Ω , then for $a_1, \dots, a_n \in [0, \infty)$, show that $\sum_{i=1}^n a_i \mu_i$ is a measure on \mathcal{F} over Ω .
- 2** Let μ be a measure on a σ -algebra \mathcal{F} over Ω . Then show that for any $a, b \in \mathcal{F}$, $\mu(a \cup b) = \mu(a) + \mu(b) - \mu(a \cap b)$.
- 3** Let μ be a measure on a σ -algebra \mathcal{F} over Ω . Let $E \in \mathcal{F}$. Define $\mu_E(a) = \mu(a \cap E)$ for all $a \in \mathcal{F}$. Show μ_E is a measure.
- 4** [Durrett, Exercises 1.2.1]