Department of Electrical & Computer Engineering
University of California, Santa Barbara

ECE 235
Fall 2007
Shynk
H.O. #3

HOMEWORK #1

Due Friday, October 5, 2007 (5:00 p.m.)

Reading: Review Chapters 1 and 2

Problems:

1. Chapter 1: Problem 1.16
2. Chapter 1: Problem 1.21
3. Chapter 1: Problem 1.38
4. Chapter 2: Problem 2.9
5. Chapter 2: Problem 2.16
6. Let the sample space be $\Omega = [0, \infty)$.
   - **(a)** Let $\mathcal{F}_1$ be the set of all intervals $\{[0, a)\}$. Determine if $\mathcal{F}_1$ is a field.
   - **(b)** Let $\mathcal{F}_2$ be the set of all unions of a finite number of intervals $\{[a, b)\}$. Determine if $\mathcal{F}_2$ is a σ-field.
   - **(c)** Show that $\mathcal{F}_2$ is the smallest field which contains $\mathcal{F}_1$.
   - **(d)** Show that the σ-field generated by $\mathcal{F}_2$ contains all intervals (closed or open at either end) in Ω.