Contents

Chapter 1

Elementary Set Theory

1.1 Basic Notation

1.1.1 Common Notation

$\{w\}$ denotes a set

w denotes an element

(a, b) is an open interval, not including a and b

$[a, b]$ is a closed interval, including a and b

$\{w :$ a statment$\}$: the set of elements w for which the statement holds.
ex: $\{w : a < w < b\}$

1.1.2 The Sample Space

Sample Space: denoted by Ω, as a non-empty set of all the elements concerned. These elements are called points and are denoted with lower case letters.

1.2 Set Operations

Difference: $A - B = \{w : w \in A, w \notin B\} = A \cap B^c$

Symmetric Difference:
$A \Delta B = (A - B) \cup (B - A) = \{w : w \in$ exactly one of A and B$\}$

Disjoint: Two sets are disjoint if $A \cap B = \emptyset$

Disjoint Union: For two disjoint sets the disjoint union is $A \cup B = A + B$
Infimum(inf): greatest lower bound

Supremum(sup): least upper bound