Notations and Conventions

Throughout the thesis ω denotes a real valued non-decreasing function on the real line. We use the following notations :

S = The set of points of continuity of ω.

D = The set of points of discontinuity of ω.

S_0 = The union of pairwise disjoint open intervals (a_i, b_i) on each of which ω is constant.

$S_1 = \{a_1, b_1, a_2, b_2, \dots\}$.

$S_2 = S \cap S_1$.

$S_3 = S - (S_0 \cup S_2)$.

S_2^- and S_2^+ denote the sets of those points of S_2 which are respectively the left end points and the right end points of $\{(a_i, b_i)\}$.

R = The set of real numbers.

Z = The set of positive integers.

$[a,b]$ = The closed interval $a \leq x \leq b$.

(a,b) = The open interval $a < x < b$.

$[a,b)$ = The semi-closed interval $a \leq x < b$.

$(a,b]$ = The semi-closed interval $a < x \leq b$.

$\bar{A}$ = The closure of a set A.

A' = The complement of a set A.

Φ = The empty set.

$m(E)$ = The Lebesgue measure of a Lebesgue measurable set E.

$m^*(E)$ = The outer Lebesgue measure of a set E.

$I^{\circ} = (a,b)$ if $I = [a,b]$.

I, J, I^1, J^1, I_1 etc. denote closed intervals.

A set is said to be <u>countable</u> if it is either finite or enumerable. If a property P is satisfied at all points of a set A except a countable set, then it is said that P is satisfied <u>nearly everywhere</u> or, in short, <u>n.e.</u> on A. A real valued function f on $[a,b]$ is said to be <u>Darboux</u> if $f(I)$ is connected for every closed interval $I \subset [a,b]$.

<u>Conventions</u> :

By a "set" we mean a subset of R.

We always follow the definitions :

$$\inf \phi = +\infty , \quad \sup \phi = -\infty .$$

In numbering theorems, lemmas, notes and definitions we follow the usual procedure e.g. by Theorem 1.2.3, we mean that it is the Theorem number 3 of §2 in Chapter I.