Notations and Conventions

Throughout the thesis, we follow the following notations and conventions :

Z = The set of positive integers .

$|E|$ = The Lebesgue measure of the set E.

ϕ = The empty set.

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

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

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

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

$\forall$ = For all.

f' = The derivative of the function f.

a.e. = Almost everywhere.

n.e. = Nearly everywhere.

Unless otherwise stated f, g etc. are extended real valued functions defined on $[a,b]$ and F, G etc. are real valued functions defined on $[a,b]$.

It is understood that the continuity of a function F on $[a,b]$ means the continuity on (a,b), right continuity at a and left continuity at b. We adhere to this convention at the other similar places.

The Lebesgue-integral of a Lebesgue-integrable (L-integrable) function f on $[a,b]$ is denoted by

$$\int_a^b f .$$