

Lee Peng Yee, R. Vyborný, *The Integral: An Easy Approach after Kurzweil and Henstock*, Cambridge Univ. Press, 2000, ISBN 0 521 77968 5

As the title of the book suggests, the Kurzweil-Henstock theory of integration is dealt with.

Introductory topics are included to the first chapter while in the second the basic definition of the integral is given with its important basic properties.

More sophisticated topics are given in Chapter 3 including the convergence theorem for Kurzweil-Henstock integrals based on the concept of equiintegrability of a set of function, the McShane integral which is equivalent to the Lebesgue integral and can be also defined by using Riemann type integral sums for certain partitions of an interval.

In Chapter 4 and 5 the strong Luzin integral is defined and it is shown that it is equivalent to the Kurzweil-Henstock integral. This part of the book touches more advanced concepts concerning real function as generalized absolute continuity, AC^* and BV^* functions as we know them from the classical book of S. Saks and also the controlled convergence result which belongs to the first author Lee Peng Yee.

In Chapter 6 the integration of functions over n -dimensional intervals is presented with Fubini type theorems and the change of variables (substitution). At this point it has to be mentioned that, because the Kurzweil-Henstock integral is a non-absolutely convergent integral, the integration over n -dimensional sets causes difficulties which can be overcome by looking for absolutely Kurzweil-Henstock integrable functions.

The last chapter of the book is devoted to some applications of the theory presented in the previous parts to problems in analysis (line integrals, Green's theorem, Dirichlet problem, Fourier series, etc.).

The book is well written, suitable for use in elementary courses as well as for graduate studies and it can be recommended for a wide audience of students and specialists in the theory of integration and real analysis in general.