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Lebesgue-Stieltjes Measure on Time Scales

Aslı DENİZ

İzmir Institute of Technology,

Department of Mathematics

Urla, İzmir, TURKEY

e-mail: aslideniz@iyte.edu.tr

Ünal UFUKTEPE

İzmir University of Economics,

Department of Mathematics

35330 Balçova, İzmir, TURKEY

e-mail: unal.ufuktepe@ieu.edu.tr

Abstract: The theory of time scales was introduced by Stefan Hilger in his Ph. D. thesis in 1988, supervised by Bernd Auldbach, in order to unify continuous and discrete analysis [5]. Measure theory on time scales was first constructed by Guseinov [4], then further studies were made by Guseinov-Bohner [1], Cabada-Vivero [2] and Rzezuchowski [6]. In this article, we adapt the concept of Lebesgue-Stieltjes measure to time scales. We define Lebesgue-Stieltjes Δ and ∇ -measures and by using these measures, we define an integral adapted to time scales, specifically Lebesgue-Stieltjes Δ -integral. We also establish the relation between Lebesgue-Stieltjes measure and Lebesgue-Stieltjes Δ -measure, consequently between Lebesgue-Stieltjes integral and Lebesgue-Stieltjes Δ -integral.

Key Words: Time scales, Lebesgue-Stieltjes Δ -measure, Lebesgue-Stieltjes Δ -integral.

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