

Addition of Sigmoid-Shaped Fuzzy Numbers Using the Dombi operator and Infinite Sum Theorems

J. Dombi and N. Györbíró

University of Szeged, Institute of Informatics
{dombi | gyorbiro}@inf.u-szeged.hu

Abstract

The extension principle defines the arithmetic operations on fuzzy numbers. In the extension principle one can use any t-norm for modeling the conjunction operator. It is therefore important to know, which t-norms are consistent with a particular type of fuzzy number. We call a t-norm consistent, if the arithmetic operation is closed. In this paper we investigate the addition of sigmoid and two bell-shaped membership functions. We prove that the addition is closed if the Dombi operator is used.

Keywords: Zadeh's extension principle, Dombi operator, sigmoid-shaped fuzzy number.