EXTENSION OF THE CANTOR SET: THE MIDDLE 293RD CONCEPT

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Review Article

Abstract
In 1874, Georg Ferdinand Ludwig Philipp Cantor, a German mathematician, came out with the Cantor Ternary Set. In this research, another concept has been developed. The process is done by deleting the middle two hundred and ninety-third (293rd).

Keywords: Cantor set, extension, general formula, middle 293rd set

1. Introduction
If \( T_0 = [0, 1] \), then the general formula for the middle 293rd can be derived as depicted in the section on Main Result which took the signal from the Cantor set which was obtained by deleting the middle third (Obeng-Denteh, Amoako-Yirenkyi & Asare, 2016).

2. Main Result

Let \( T_0 = [0, 1] \)

For \( T_1 \),

\[ T_1 = \left[ 0, \frac{146}{293} \right] \cup \left[ \frac{147}{293}, 1 \right] \]

For \( T_2 \),

\[ T_2 = \left[ 0, \frac{21316}{85849} \right] \cup \left[ \frac{21462}{85849}, \frac{146}{293} \right] \cup \left[ \frac{147}{293}, \frac{64387}{85849} \right] \cup \left[ \frac{64533}{85849}, 1 \right] \]

For \( T_3 \),

\[ T_3 = \left[ 0, \frac{3112136}{25153757} \right] \cup \left[ \frac{3133452}{25153757}, \frac{21316}{85849} \right] \cup \left[ \frac{21462}{85849}, \frac{9400502}{25153757} \right] \]

\[ \cup \left[ \frac{9421818}{25153757}, \frac{146}{293} \right] \cup \left[ \frac{147}{293}, \frac{15753255}{25153757} \right] \cup \left[ \frac{15753255}{25153757}, \frac{64387}{85849} \right] \]

\[ \cup \left[ \frac{64533}{85849}, \frac{22020305}{25153757} \right] \cup \left[ \frac{22020305}{25153757}, \frac{22041621}{25153757} \right] \cup \left[ \frac{22041621}{25153757}, 1 \right] \]
Culminating into $T_n = \left( \frac{146}{293} T_{n-1} \right) \cup \left( \frac{147}{293} + \frac{146}{293} T_{n-1} \right), n \in \mathbb{N}$.

3. Concluding Remarks
Thus the formula for the middle 293rd is given by

$$T_n = \left( \frac{146}{293} T_{n-1} \right) \cup \left( \frac{147}{293} + \frac{146}{293} T_{n-1} \right), n \in \mathbb{N}.$$

REFERENCE