



De La Salle University

ON PROPERTIES OF JACOBSTHAL REPRESENTATION NUMBERS

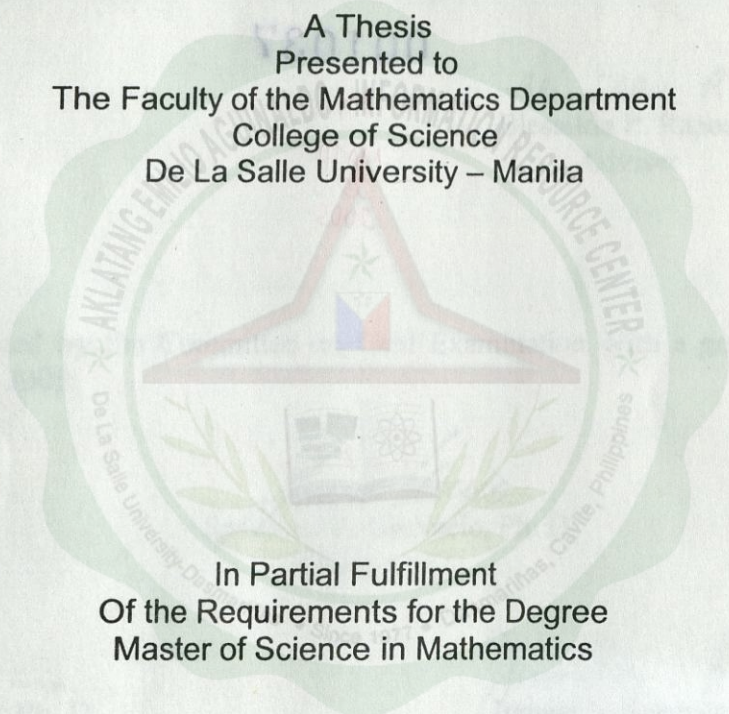
APPROVAL SHEET

This thesis has been examined

"On Properties of Jacobsthal Representation Numbers"

submitted and defended by Leonor T. Amacio in partial fulfillment of the requirements for the degree of Master of Science in Mathematics. This thesis has been examined and is approved for presentation in support of ORAL EXAMINATION.

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ABSTRACT

THE PROBLEM AND ITS BACKGROUND

This thesis is an exposition of the paper "Jacobsthal Representation Numbers by A. F. Horadam [7] which appeared in the Fibonacci Quarterly Volume 34. 1996, pages 40-54.

This gives the proof of the properties of the Jacobsthal numbers given by

$$J_n = J_{n+1} + 2J_{n+1} + 2J_n \quad \text{with } J_0 = 1, J_1 = 1$$

and Jacobsthal – Lucas numbers given by

$$j_n = j_{n+1} + 2j_n \quad \text{with } j_0 = 2, j_1 = 1.$$

The properties of the sequences

$$\mathfrak{J}_n = \sum_{i=2}^n J_i, \quad \mathfrak{J}_0 = 1, \quad \mathfrak{J}_1 = 1$$

and

$$\hat{j}_n = \sum_{i=1}^n j_i \quad \hat{j}_0 = 0$$

were also proved.

Systematic representation for a positive integer N using Jacobsthal

numbers was given as $N = \sum_{i=1}^{\infty} \Pi' J'_i$ and $N = \sum_{i=1}^{\infty} \pi' j_i$ using Jacobsthal- Lucas numbers.