

STUDY OF CERTAIN MOCK THETA FUNCTIONS AND SOME PARTIAL ORDER RELATIONS

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Abstract: This paper consists representations of different order of mock theta functions and relations and expansions of partial mock theta functions, mock theta functions of tenth, third, fifth and sixth order. Using a simple identity, we connect the tenth order mock theta functions with partial tenth order mock theta functions of third, fifth, and sixth order. In this paper, we study relations between fifth order mock theta functions and third order mock theta functions and their partial sums. we have studied expansions of a tenth order mock theta functions in terms of partial mock theta function of tenth order also.

In this paper, we have established some new relations between mock theta functions and partial mock theta functions using tenth, third, fifth, and sixth order mock theta functions.

Keywords and Phrases: Basic Hypergeometric Series, Mock-Theta Functions, Partial Mock-Theta Functions, Identity

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1. Introduction

Ramanujan's definition of a mock theta function and notations The following q -notations have been used. For $|q| < 1$ and $|q^k| < 1$,

$$(a; q)_n = \prod_{j=0}^{n-1} (1 - aq^j), \quad n \geq 1$$

$$(a; q^k)_n = \prod_{j=0}^{n-1} (1 - aq^{kj}), \quad n \geq 1$$