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A note on mock theta functions of order two

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Abstract: In this paper, making use of some known results, an attempt has been made to give continued fraction representations of mock theta functions of order two.

Keywords: Mock theta function of order two, continued fraction, eta-function identity.
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1. Introduction:

Throughout this note, we shall adopt following notations and definitions. The q-shifted factorial is denoted by

$$[a;q]_n = (1-a)(1-aq)...(1-aq^{n-1}), \qquad n = 1, 2, 3...$$

$$[a;q]_0 = 1,$$

$$[a;q]_\infty = \prod_{r=0}^{\infty}(1-aq^r).$$

Basic hypergeometric series is defined by,

$${}_r\Phi_s \left[\begin{array}{c} a_1, a_2, ..., a_r; q; z \\ b_1, b_2, ..., b_s; q \end{array} \right]$$

$$= \sum_{n=0}^{\infty} \frac{[a_1, a_2, ..., a_r; q]_n}{[b_1, b_2, ..., b_s; q]_n} \left[(-)^n q^{n(n-1)/2}\right]^{1+s-r} z^n,$$