

Expressions from Rational Number Series

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Abstract-- This paper contains expressions from numbers system. There are four expressions in total. All the expressions are derived from the Rational Number Series^[1].

Keywords — Rational number series, arithmetic progression, arithmetico-geometric progression;

I. INTRODUCTION

I wrote a paper on Rational Number Series^[1]. It was published in the journal JETIR. I was convinced on the intuitions raised by the rational number series. I worked on expressions from the Rational Number Series and obtained an equation for the Golden Ratio and also a prime number generating polynomial of high efficiency. I further worked on the intuitions raised by the rational number series. And I arrived at many expressions of significance. This paper contains some expressions derived from the Rational Number Series^[1]. There are four expressions in total.

II. THE FIRST EXPRESSION

The first expression is given below. It is the relationship between three consecutive numbers in arithmetic progression and four consecutive numbers in arithmetic progression.

The expression is

$$2 * \left(\frac{n}{(n+a)} - \frac{(n-a)}{n} \right) = \left(\frac{(2n+a)}{(2n+2a)} - \frac{(2n-a)}{2n} \right)$$

III. THE SECOND EXPRESSION

The second expression is given below. It is the relationship between three consecutive numbers in arithmetico-geometric progression and four consecutive numbers in arithmetico-geometric progression.

The expression is

$$2 * \left(\frac{n * bc^1}{(n+a) * bc^2} - \frac{(n-a) * bc^0}{n * bc^1} \right) = \left(\frac{(2n+a) * ec^1}{(2n+2a) * ec^2} - \frac{(2n-a) * ec^{-1}}{(2n) * ec^0} \right)$$

IV. THE THIRD EXPRESSION

The third expression is given below. It is the relationship between three consecutive numbers and factorials of n and (n+1).

The expression is

$$(n+1)! (n)! \prod_{m=1}^n \left(\frac{m}{(m+1)} - \frac{(m-1)}{m} \right) = 1$$

V. THE FOURTH EXPRESSION

The fourth expression is given below. It is the relationship between four consecutive numbers and factorials of n and (n+1).

The expression is

$$(n+1)! (n)! \prod_{m=1}^n \left(\frac{(2m+1)}{(2m+2)} - \frac{(2m-1)}{2m} \right) = 2^{-n}$$

VI. CONCLUSIONS

The above four are only some of the expressions that I have submitted. More expressions are possible using the Rational Number Series^[1] concept.

REFERENCES

- [1] Kirtivasan Ganesan, *Rational Number Series*, June 2019 <http://www.jetir.org/papers/JETIR1907J15.pdf> (www.jetir.org (ISSN -2349-5162))J