

1 More Insight in Sequence of Happy Cube Numbers

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Abstract

A positive integer is called Fixed Happy Cube Numbers (FHCN) in case, if you are cubing its digits and adding them together one time you got the same number. For example the number 153 is happy cube because; $153 = 1^3 + 5^3 + 3^3$, in fact this paper will address new propriety of this extraordinary happy cube number .

3 The sequence integers of happy cube

In a recent paper, M. J. Karama [1]. studied the sequence of happy cube numbers and formulated it in this manner 1,153,370, 371,407 , .. , , and conjectured , proposed open questions to explore the beauty of this important sequence .

4 New results

Focusing in the number 153, we got more happy cubes;

$$\begin{aligned} 153 &= 1^3 + 5^3 + 3^3 \\ 165033 &= 16^3 + 50^3 + 33^3 \\ 166500333 &= 166^3 + 500^3 + 333^3 \\ 166650003333 &= 1666^3 + 5000^3 + 3333^3 \\ 166665000033333 &= 16666^3 + 50000^3 + 33333^3 \\ 166666500000333333 &= 166666^3 + 500000^3 + 333333^3 \\ 166666650000003333333 &= 1666666^3 + 5000000^3 + 3333333^3 \\ 166666665000000033333333 &= 16666666^3 + 50000000^3 + 33333333^3 \\ 166666666500000000333333333 &= 166666666^3 + 500000000^3 + 333333333^3 \\ 166666666650000000003333333333 &= 1666666666^3 + 5000000000^3 + 3333333333^3 \\ 16...5033 &= 16...^3 + 50^3 + 33^3 \end{aligned}$$

So we have the general formula for this sequence namely ;

$$16na50nb3nc = 16na^3 + 50nb^3 + 3nc^3, \text{ where } na = 6s, nb = 0; s, \text{ and } nc = 3s$$

, with the condition all ns are equals of the number of iterations .

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5 Open question

1) Can we have the same producers for the rest of all elements of 1,153,370, 371,407 , .. , ? 2) If so , what are the general formulas for these sequences ?

References

- [1] Muneer Jebreel Karama. Smarandache friendly cube numbers. *Department of Mathematics Northwest University*, 1(1):67, 2006.