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Formula *x Cube*

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Abstract: ***In this paper, we are going to talk about formula x³. In this formula, we can see the x³, which shows the signs of a cubic equation/polynomial as x³+0x²+0x+0=0. In this paper, I have tried to represent a new cubic formula, for d = 0. In this work, I tried to present a new method for solving the cubic problem. I derived the new cubic formula, by chance computation, and invented a new cubic formula for a cubic equation without constant.***

Keywords: Polynomial: Algebraic equation with any number of terms (1 or more than 1). Linear Polynomial: Polynomial with the power of 1.

1. Introduction

Ease of Use

As I have mentioned earlier, the general form of cubic formula consists of a, b, c (coefficients of variable x^3, x^2 and x respectively), and d (constant). One day, I decided to disturb this equation as my *random experiment*, hoping that I will get something identical to the invention of quadratic formula. Unknowingly, I accidentally discovered a cubic formula for a cubic has already been derived. It is way harder than the quadratic formula.

But, unfortunately, I have already done the calculations, but later I knew that We can at least use it somewhere, because I didn't use anything outside the formula like putting extra powers. Well, I think we can at least give it a try and I am really very ambitious that people can at least use it, even though it could be wrong, I am very proud because it was my invention. This is just the start, I will try to contribute to mathematics regularly. Well, what I think is we can use this formula as another representation of the cubic equation, without MUCH modification.

2. Work

Here, I tried to make a cubic formula for $d = 0$. It is yet to be found whether such calculation is done by someone else or not.But I am sure that I am going to do it right now.

Therefore, one possible continuation that I would like to add is:

Quadratic Polynomial: Polynomial with the power of 2.
Cubic Polynomial: Polynomial with the power of 3.
Quadratic Formula: A formula to solve for variables in quadratic equations.
Cubic Formula: A formula to solve for variables in a cubic equation.

For d=0 (since d have some other property as constant from a, b and c, we are going to review only one situation for $d = 0$ because it is very difficult and complicated for $d \neq 0$. To avoid confusion, I have only put the formula on taking

$$-b - \sqrt{b^2 - 4ac}$$

We have

$$ax^3 + bx^2 + cx = 0$$

$$x(ax^2 + bx + c) = 0$$

On solving calculating the quadratic equation

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

On putting on the original equation

$$x(a[\frac{-b \pm \sqrt{b^2-4ac}}{2a}]^2 + b[\frac{-b \pm \sqrt{b^2-4ac}}{2a}] + c) = 0$$

$$x(a[\frac{-b \pm \sqrt{b^2-4ac}}{2a}]^2 + b[\frac{-b \pm \sqrt{b^2-4ac}}{2a}] + c) = 0$$

On taking $-b - \sqrt{b^2 - 4ac}$

$$x(a[\frac{\{-b-\sqrt{b^2-4ac}\}^2}{\{2a\}^2}] + b[\frac{-b-\sqrt{b^2-4ac}}{2a}] + c) = 0$$

$$x(a[\frac{\{-b\}^2 + \{b^2-4ac\} - \{2[-b](4ac)\}}{\{2a\}^2}] +$$

$$b[\frac{-b-\sqrt{b^2-4ac}}{2a}] + c) = 0$$

$$x(a[\frac{\{-b\}^2 + \{b^2-4ac\} - [-2b][4ac]}{4a^2}] +$$

$$b[\frac{-b-\sqrt{b^2-4ac}}{2a}] + c) = 0$$

$$x(a[\frac{b^2 + b^2 - 4ac + 128a^3b^2c^2}{4a^2}] + b[\frac{-b-\sqrt{b^2-4ac}}{2a}] + c) = 0$$

$$x(a[\frac{2b^2 - 4ac + 128a^3b^2c^2}{4a^2}] + b[\frac{-b-\sqrt{b^2-4ac}}{2a}] + c) = 0$$

On sending terms to RHS

$$x(a[\frac{2b^2 - 4ac + 128a^3b^2c^2}{4a^2}]) + b[\frac{-b-\sqrt{b^2-4ac}}{2a}]) = -$$

$$x(a[\frac{2b^2 - 4ac + 128a^3b^2c^2}{4a^2}]) = -C - b[\frac{-b-\sqrt{b^2-4c}}{2a}$$

$$x = \frac{-C - b[\frac{-b-\sqrt{b^2-4ac}}{2a}]}{a[\frac{2b^2-4ac+128a^3b^2c^2}{4a^2}]}$$

So, this was the best and closest I tried to get.

3. Conclusion

In summary, I tried to derive a new cubic formula for d=0. I have shown all the possible calculations.

Since I wrote this research paper during some problems, I might overlook some mistakes. Therefore, if you find any mistakes or want to give any suggestions. Please mail at the given e-mail. I would love to hear from you in future.

Note: 12th April, 2024 is a really important date for which I wrote this research paper.

References

No references. Complex calculations are done by calculators.

Author Profile

Rishikesh Biswas, a super ordinary 8th grader in India, who has contributed a little to the field of mathematics by doing nothing much by just publishing two research papers (excluding this one) and a book. Besides that, author play tabla (Indian Classical Musical Instrument) and have a national scholarship in it from the Ministry of Culture. Author has played chess in nationals as well.