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6) 1+400. Divulgación con 1 imagen y 400 palabras

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Function Arts and Its Potential as a Teaching Tool

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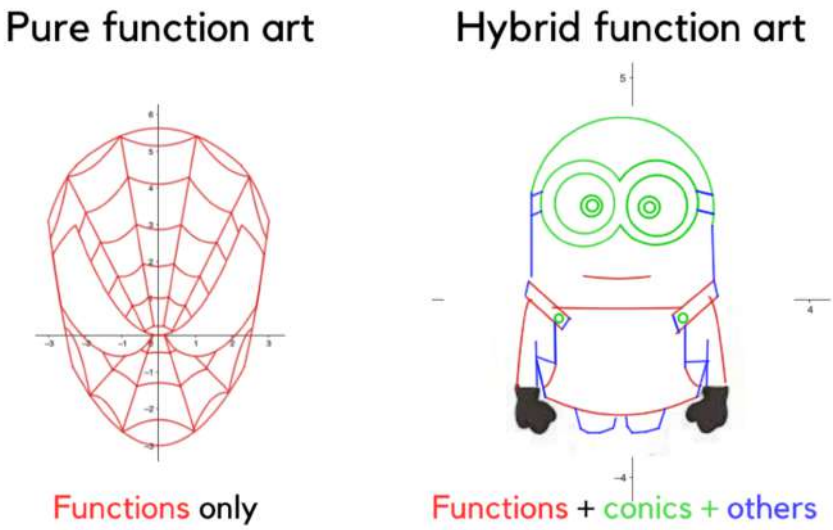
GeoGebra is recognized as one of the most popular software tools for teaching and learning mathematics. One of its key advantages lies in its compatibility with various operating systems and hardware platforms. Furthermore, it features a two-way register of representations. This means that users can construct geometric objects, and the corresponding algebraic representation are automatically generated, and vice versa. For instance, typing equations for functions automatically generates the respective graphs, while drawing circles generate their equations.

In both cases, modifications made to either the algebraic or geometric representation are seamlessly synchronized with the other.

I used GeoGebra while implementing the Function Arts Project as part of my doctoral studies. This project entails students creating function arts, which refers to artwork that incorporates graphs of mathematical functions. Two examples are showcased below: the first represents pure function arts, employing exclusively graphs of mathematical functions, while the second showcases hybrid function arts, combining graphs of mathematical functions with other mathematical objects like conics and line segments.



Sample Function Arts

The preliminary findings in my project have revealed that function arts offer valuable opportunities for students to demonstrate their comprehension of functions, their properties, as well as their creative thinking. For example, in the Spiderman artwork, the student utilized the general equation of the function $f(x) = ax^2 + bx + c$ and ingeniously varied the signs of b to create symmetric curves. Additionally, she effectively utilized the function's domain to accurately glue the graphs together. She also showcased an understanding of symmetry by skillfully defining the precise domains (-b, -a) and (a, b) for all the symmetric curves. On the other hand, the student behind the Minion artwork creatively combined functions, conics, line segments, and images to craft her artwork.

Function arts also provide opportunities for teachers to assess students' understanding of functions, domains, range, symmetry, and other mathematical concepts. Presently, I have collected hundreds of artworks and have developed a rubric for assessing them. This rubric is being tested by some mathematics teachers.

The Function Arts project is still in its early stages but holds significant potential to enhance students' understanding of functions. By incorporating art, it aims to create an enjoyable learning experience that does not neglect the importance of mathematics. It has the potential to be a medium for students to appreciate and engage with both art and math simultaneously.

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