Analyzing Computer Generated Collatz-type Fractals (Phase 2)

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The Collatz Conjecture and another of similar structure revolving around congruence modulus 3, can be represented as fractals when they are written as holomorphic functions. However, the methods to produce these functions are increasingly complicated when working with greater congruences, especially the indicator functions which allow the operations to be performed to be identi♀fied. This research concentrates in automizing the process of creating Collatz-type problems using computer code. The problem was if this complicated process can be automated using computer code. The power of 2 functions were identical after distribution, and while the functions for the odd numbers were similar in structure, the indicator functions were created using approximations of sine functions and square roots. The code, apart from generating the function used to generate the fractal, can also generate information related to the fractal including the problem itself and a test for numbers 1 through 100. This means that the Collatz-type problems studied in my past research, and a theoretically infi♀nite range of fractals can be generated with this code, accepting my hypothesis.

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