Review of: "On a New Two-Point Taylor Expansion With Applications"

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The article under review presents a new proposal for the Taylor expansion using two arbitrary points x_{0} and x_{1}. The author, using numerical examples for both a function with a finite radius of convergence and a function with a finite radius of convergence, numerically compares his version with the classical version of the Taylor expansion with one point, showing some advantages of his proposal over this classic version. Furthermore, the author also numerically compares his proposal with the classical proposal of the two-point Taylor expansion using an even function and an odd function, verifying numerically that both versions produce the same results. Finally, the author shows the application of his proposal to the solution of a differential equation with variable coefficients. Regarding the proof of his theorem, I have the following observations.

- To improve the wording of the theorem, I suggest the following: Given an analytical function f(x) and the convergent polynomial approximation defined with respect to two reference points x=x_{0} and x=x_{1}, then

$$f(x) = \sum_{m=0}^{\infty} \ldots\ldots (everything\ remains\ the\ same\ as\ in\ the\ original\ document)$$

- Make explicit, at least, the deduction of the recursive formula for a_{2m}.

Regarding numerical examples, I suggest the following:

- In example 3.1, explain the deduction of equations (40), (45), and (46).
- Explain if it is possible to use your result for other types of differential equations, and if not, show, through some example, the weaknesses of your result for its application in contexts other than differential equations with variable coefficients.