

Review Form 3

Journal Name:	Asian Research Journal of Mathematics
Manuscript Number:	Ms_ARJOM_123962
Title of the Manuscript:	Kth-DIMESIONAL DIFFERENTIAL TRANSFORM METHOD FOR THE GENERAL SOLUTION OF INITIAL VALUE PROBLEMS OF ORDINARY DIFFERENTIAL EQUATIONS
Type of the Article	

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PART 1: Review Comments

Compulsory REVISION comments	Reviewer's comment	Author's Feedback <i>(Please correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)</i>
<p>Please write a few sentences regarding the importance of this manuscript for the scientific community. Why do you like (or dislike) this manuscript? A minimum of 3-4 sentences may be required for this part.</p>	<p>This manuscript addresses an important challenge in solving ordinary differential equations by introducing a powerful and efficient method based on kth-order differential transform. Its ability to generate solutions for first and second-order problems while demonstrating accuracy through numerical examples makes it a valuable addition to the existing methods. I appreciate the clear demonstration of the method's usability, although further exploration on higher-order differential equations and a more thorough comparison with other methods would strengthen the manuscript further.</p>	
<p>Is the title of the article suitable? (If not please suggest an alternative title)</p>	<p>The title does not specify the type of equations being addressed. Therefore, it should be changed as follows: "Numerical Solutions of First- and Second-Order Ordinary Differential Equations Using the Kth-Dimensional Differential Transform Method"</p>	
<p>Is the abstract of the article comprehensive? Do you suggest the addition (or deletion) of some points in this section? Please write your suggestions here.</p>	<p>The abstract provides a solid overview of the study, but it can be improved with a more precise and concise explanation of the kth-order differential transform method's application and results. I suggest the following revisions:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Clarify the phrase "the effect of the kth-order differential transform method" by focusing on what the method specifically accomplishes. <input type="checkbox"/> Improve the description of the transformation process using the Taylor series and its role in the solution. <input type="checkbox"/> Add more detail about the types of numerical examples used and how they demonstrate the method's effectiveness. 	
<p>Are subsections and structure of the manuscript appropriate?</p>		
<p>Please write a few sentences regarding the scientific correctness of this manuscript. Why do you think that this manuscript is scientifically robust and technically sound? A minimum of 3-4 sentences may be required for this part.</p>	<p>This manuscript appears to be scientifically robust and technically sound. The proposed Differential Transform method is well-founded as it simplifies computations by removing the need for linearization, discretization, or perturbation, thus enhancing usability and efficiency. The claims about the method's accuracy and the potential for closed-form solutions are well-supported, indicating that this approach is mathematically consistent and adaptable for a range of problems.</p>	
<p>Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form. =</p>	<p>The primary objective of the Differential Transform Method is to provide an approach for solving not only ordinary differential equations but also fractional-order equations. Therefore, the authors have to include a discussion on fractional derivatives. These derivatives can be defined using the Riemann–Liouville, Caputo, and other formulations. The authors may refer to Ref. [1] (as mentioned) for the definition of fractional derivatives.</p> <p>Moreover, the generalization and application of the method have to be described in Introduction, similar to how they were addressed in previous studies. I have referenced them as Refs. [2-7].</p> <p>Based on the analysis above, the literature review lacks the necessary depth. I recommend incorporating key studies in the Introduction, particularly those that address both the generalization aspects and numerical studies related to the method.</p> <ol style="list-style-type: none"> 1. Podlubny, I. (1999). Fractional Differential Equations, Academic Press, San Diego. 2. Arikoglu, A. and Ozkol, I. (2006). Solution of fractional differential equations by using differential transform method, Chaos Soliton Fract., doi:10.1016/j.chaos. 3. Z. Odibat and N. Shawagfeh, Generalized Taylor's formula, <i>Appl. Math. Comput.</i> 186, 286–293 (2007). 4. Najafi, H. S.; Mirshafaei, S. R.; and Toroqi, E. A. (2012). An Approximate Solution of the 	

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	<p>Mathieu Fractional Equation by Using the Generalized Differential Transform Method (Gdtm), Applications and Applied Mathematics: An International Journal (AAM), Vol. 7, Iss. 1.</p> <p>5. Amoupour, E., Toroqi, E. A., & Najafi, H. S. (2018). Numerical experiments of the Legendre polynomial by generalized differential transform method for solving the Laplace equation. Communications of the Korean Mathematical Society, 33(2), 639-650.</p> <p>6. H. Saberi Najafi, E. Arsanjani Toroqi, and A. Jafarzadeh Divishali, <i>A new fractional model of single degree of freedom system, by using generalized differential transform method</i>, Rom. J. Math. Comput. Sci. 6 (2016), no. 1, 93-105.</p> <p>7. H. Saberi Najafi, E. Arsanjani Toroqi, and A. Jafarzadeh Divishali, <i>A new fractional model of single degree of freedom system, by using generalized differential transform method</i>, Rom. J. Math. Comput. Sci. 6 (2016), no. 1, 93-105.</p>	
<p><u>Minor REVISION</u> comments</p> <p>Is the language/English quality of the article suitable for scholarly communications?</p>	<p>1. In Table 1: The authors have to substituting Equations (3.8) and (3.9) instead of $Y_{\text{Exact}}(x) = -\frac{24}{37} \cos(3x) - \frac{4}{37} \sin(3x) + \frac{61}{37} e^{\frac{x}{2}}$ and $y_{DT}(x) = 1 + 0.5x + 3.125x^2 + 0.5208333333x^3 - \dots$. It has to change in Table 2 similarly.</p> <p>2. Please put the “fewer” instead of “lesser” in Conclusion.</p> <p>3. “discretization,” instead of “discretization” in Conclusion.</p> <p>4. In the last two paragraphs: Add “an” before “approximate analytical solution.”</p> <p>5. Change “effect of computational round off error” to “effect on computational round-off error.”</p> <p>6. Remove “for” from the phrase “for the method gives an accurate result.”</p>	
<p><u>Optional/General</u> comments</p>	<p>This manuscript presents significant numerical results. Therefore, it is expected to be ready for publication following the necessary corrections.</p>	

PART 2:

	Reviewer’s comment	Author’s comment (if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)
<p>Are there ethical issues in this manuscript?</p>	<p><i>(If yes, Kindly please write down the ethical issues here in details)</i></p>	

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