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Abstract

In this paper, a numerical technique is applied to a five variable giving up smoking fractional mathematical model. This model is based on five types of smokers, i.e. potential, occasional, heavy, temporary quitters and permanent quitters. Efficacy of Perturbation Iteration Algorithm on fractional system of differential equations is shown graphically between standard Runge-Kutta method and PIA.

References

1. Erturk, V.S., Zaman, G., Momani, S. (2012) A numericanalytic method for approximating a giving up smoking model containing fractional derivatives, *Computer and Mathematics with Applications*, 64(2), pp 3068–3074.
2. Mohamed, S.A., Nahed, A.S. (2014) An analytical treatment to fractional gas dynamics equation, *Applied and Computational Mathematics*, 3(6), pp 323–329.
3. Singh, J., Kumar, D., Kilicman, A. (2014) Homotopy perturbation method for fractional gas

dynamics equation using sumudu transform, *Abstract and Applied Analysis*, 2014, ID 934060, 8 pages.

4. Mohamed, S.A. (2015) New iterative Method for fractional Gas Dynamics and coupled Burger's equation, *The Scientific World Journal*, 2015, ID 153124, 8 pages.

5. Khalid, M., Sultana, M., Zaidi, F., Khan, F.S. (2015) Numerical Solution for SIR Model of Dengue Fever, *International Journal of Computer Applications*, 118(21), 4 pages.

6. Khalid, M., Sultana, M., Zaidi, F., Khan, F.S. (2015) Solving Polluted Lakes System by Using Perturbation Iteration Method, *International Journal of Computer Applications*, 114(4), 7 pages.

7. Khalid, M., Sultana, M., Zaidi, F., Khan, F.S. (2015) A numerical Solution o a Model for HIV Infection CD4+ T-cell, *International Journal of Innovation and Scientific Research*, 16(1), pp 79–85.

8. Zaman, G. (2011) Optimal campaign in the smoking dynamics, *Computational and Mathematical Methods in Medicine*, 2011, ID 163834, 9 pages.

9. Zaman, G. (2011) Qualitative behavior of giving up smoking models, *Bulletin of the Malaysian Mathematical Sciences Socitey*, 34(2), pp 403–415.

10. Lubin, J.L., Caporaso, N.E. (2006) Cigarette smoking and lung cancer: modeling total exposure and intensity, *Cancer Epidemiology, Biomarkers and Prevention*, 15(3), pp 517– 523.

11. Garsow, C.C., Salivia, G.J., Herrera, A.R. (2000) Mathematical Models for the Dynamics of Tobacco use, recovery and relapse, Technical Report Series BU-1505-M, Cornell University, UK.

12. Sharomi, O., Gumel, A.B. (2008) Curtailing smoking dynamics: a mathematical modeling approach, *Applied Mathematics and Computation*, 195(2), pp 475–499.

13. Zeb, A., Chohan, I., Zaman, G. (2012) The Homotopy Analysis method for Approximating of Giving Up Smoking Model in Fractional Order, *Applied Mathematics*, 3, pp 914–919.

14. Alkhudhari, Z., Al-Sheikh, S., Al-Tuwairqi, S. (2014) Global dynamics of a mathematical model on smoking, *Applied Mathematics*, 2014, ID 847075, pp 914–919.

Index Terms

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Keywords

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