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## Book Descriptions:

# braun differential equations and their applications solutions manual

Shed the societal and cultural narratives holding you back and let stepbystep Differential Equations and Their Applications An Introduction to Applied Mathematics textbook solutions reorient your old paradigms. NOW is the time to make today the first day of the rest of your life. Unlock your Differential Equations and Their Applications An Introduction to Applied Mathematics PDF Profound Dynamic Fulfillment today. YOU are the protagonist of your own life. Let Slader cultivate you that you are meant to be! Please reload the page. First, we have completely rewritten the section on singular solutions of differential equations. A new section, 2.8.1, dealing with Euler equations has been added, and this section is used to motivate a greatly expanded treatment of singular equations in sections 2.8.2 and 2.8.3. Our second major change is the addition of a new section, 4.9, dealing with bifurcation theory, a subject of much current interest. We felt it desirable to give the reader a brief but nontrivial introduction to this important topic. Our third major change is in Section 2.6, where we have switched to the metric system of units. This change was requested by many of our readers. In addition to the above changes, we have updated the material on population models, and have revised the exercises in this section. Minor editorial changes have also been made throughout the text. Only valid for books with an ebook version. Springer Reference Works and instructor copies are not included. Used GoodBook is in good shape; moderate signs of wear on the cover and binding. 100% Money Back Guarantee. Shipped to over one million happy customers. Please try again. Please try again. Then you can start reading Kindle books on your smartphone, tablet, or computer no Kindle device required. <http://www.stumet.eu/pliki/dualshock-3-owners-manual.xml>

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BD3.2 and 3.3. Application using the Wronskian to Uniqueness Theorem for First order Equations BD2.11. The Contraction Mapping Theorem. Uniqueness Theorem translating the equation into integral form. Picard iterates. Theorem the Lipschitz condition, and Lipschitz constants. Problem Set 6 due. Practice sketching. Guest lecturer Prof. Marcolli. Computing powers A handout on Phase portraits Miller is available outside my office. Power series introduction, BD 5.1. Problem set 9 due. Why  $\sqrt{2}$ ,  $e$ , and  $\pi$  are irrational. Some comments on why  $e$  is transcendental. Remarks on the theory of distributions and generalized functions. Coffee in Walker. Chapter 1. Chapter 2 except 2.12. The contraction mapping theorem Chapter 4. Chapter 5, except 5.8. Chapter 6. Chapter 7. But, I am unable to solve this analytically. The equation gets converted into Abel equation of second kind. I would like to solve the equation 1 with some other method or with the method that I had started. Kindly help in solving this, Thank you for your time. Relevant answer Julien Clinton Sprott Jul 15, 2020 Answer I don't know about analytic solutions but this is the equation for a harmonic oscillator in a constant force field with nonlinear damping. It is like a mass suspended by a nonlinear spring in a gravitational field. There are no limit cycles and no chaos. View 18 Recommendations How to solve functional differential equations that involve functional derivatives. Question 4 answers Jun 11, 2020 I'm trying to solve an important functional differential equation. But the problem is, it involves functional variational derivative, instead of partial ones. Can anyone suggest me a book where it is discussed. Any kind of material related to it may help. Relevant answer Issam Kaddoura Jul 7, 2020 Answer Ashiqul Islam Dip I hope the following attached textbook is useful. You can find more textbooks online. Best regards 97897759454 95 1.pdf 2.

87 MB View 3 Recommendations Can anyone help me finding a research topic involving Differential Equations for an undergraduate research project. Question 7 answers Oct 11, 2014 I have a set of nonlinear ordinary differential equations with some unknown parameters that I would like to determine from experimental data. Does anybody know of any good freely available software, or good reference books. Relevant answer Rudolf Scitovski Mar 31, 2020 Answer Use Mathematica modul Nonlinear Model Fit. View 0 Recommendations Which writing style do you prefer, Stylus or pencil. Your comparison is based on being faster, easier, storage and backup, etc. Relevant answer Shatha S Alhily Jan 4, 2020 Answer Hello I agree with Maged about using a digital pen

stylus.Regards View 5 Recommendations Why frobenius method of series solution treats differently when indicial equation roots differ and when they do not differ by an integer. Question 5 answers Nov 4, 2019 What would be the logical mistake if indicial equation roots are actually different by an integer, but still mathematically one solves the equation following the route of noninteger difference, still evaluated at ordinary singular point. Suppose, the ODE is of second order. Would doing so might result in two linearly independent solutions whose one particular linear combination in a terminating series. I am following textbook on Ordinary and Partial differential equations by Dr. M.D. Raisinghania, but logic behind the method is not mentioned in the book. Relevant answer Panchatcharam Mariappan Nov 25, 2019 Answer The logic is that we need to find two independent solutions. If they differ by an integer, one can be obtained from others by setting few zero coefficients on series. You can find the proof of it from Kreyszig Advanced Engineering Mathematics book Appendix 4 View 3 Recommendations How to use adomian decomposition method for solving odes. Would Runge Kutta 4th Order work.

Question 10 answers Aug 17, 2019 Hello; I have this 2 nonlinear 2nd order differential equations. Matlab has no analytical solution for thEse. So I need to find yt and gt analytically to equate them. Then I would solve for X to find it symbolically, that was my plan. If I choose runge kutta 4th order or any other numerical solution, i dont think I can find X symbolically but I am not sure. Any comment would be appreciated. Caner Relevant answer Janusz Pudykiewicz Aug 20, 2019 Answer Dear Caner Beykont You are most welcome. Some additional suggestions are as follows. Conversion of the Mathematica script to a program written in C is discussed in the following links and Concerning the concept of an inverse function in Mathematica please consult Before converting the solution to C it is advisable to investigate the functions playing with the formulae using the traditional method pen and paper The numerical solutions are also useful as the additional method of verification. View 16 Recommendations Inverse Transform Laplace fractional differential equations. Question 6 answers Jan 4, 2019 Dear Pr Mainardi, I am a teacher researcher at Badji Mokhtar University Annaba,Algeria. I have a problem with the inverse Laplace transform of fractional differential equations. In your article Integral and Differential Equations of Fractional Order Rudolf GORENFLO and Francesco MAINARDI you used the Hankel path to find the inverse Laplace transform. If you can help me find the inverse Laplace transform of fractional differential equations. Best Regards, Dr Benchettah The fractional differential equations 1.docx 13.15 KB Relevant answer Benchettah Djaber chemseddine Jul 31, 2019 Answer Dear Norazrizal I did not find any inverse Laplace transform in the link you sent me View 0 Recommendations How to numerically solve a Differential Equation!

Question 5 answers Jul 30, 2019 I have started a research on the modeling of multibody systems dynamics, and since dynamics mean to determine the Differential Equations of Motion, i am called to make the resolution of these OEM. I need to know how to do so, so i started working on an easy example, but i find it difficult because i have no background on mathematics especially numerical integration. My question is how to proceed to solve a DAE numerically using one of these methods; Runge kutta, Adams Bashford or Moulton, Central differences or Gaussian method. Kind regards Relevant answer MohamedMourad Lafifi Jul 29, 2019 Answer Dear Yves. I suggest you to see links and attached files on topic. Dynamic Optimization in JModelica.org Semantic Scholar. Question 1 answer Jul 26, 2019 I have solved nonlinear FODE for an IVP, but in case of solving linear FODE, my question is can I solve the linear set of equations using the same algorithm. Thank you in advance. Relevant answer A. M. Abdallah Jul 27, 2019 Answer Dear Dr. Ramashis Banerjee Greeting. It is my pleasure to help you, you can read the following links1016592219341 With best wishes. View 4 Recommendations What is the difference between entropy solution, normalized solution and weak solution for a nonlinear parabolic equation. Question 3 answers May 13, 2019 A fundamental question for any PDE is the existence and uniqueness of a solution for given boundary conditions. For nonlinear equations these questions are in general very hard, hence we need an answer for the

above question. Thank you very much. Relevant answer Kabir Sadeghi May 13, 2019 Answer The answer is a little long and complicated, I recommend you read about entropy solution, normalized solution and weak solution for a nonlinear parabolic equation in a paper by clicking the following link [Article Renormalized and entropy solutions of nonlinear parabolic system](#) View 16 Recommendations Solution to Telegraphers Equation.

Question 9 answers Aug 9, 2018 Greetings. Kindly refer to some references on that topic. Relevant answer Jihad Asad May 11, 2019 Answer Dear Mohammad You may search within these references [Article The Telegraph Equation and Its Solution by Reduced Different](#). Good Luck View 14 Recommendations Volume II, Issue I of CAMS Question 2 answers Mar 29, 2019 Dear colleagues, I am very pleased to announce the launch of the new issue of the Communications in Advanced Mathematical Sciences CAMS. The CAMS will continue to be an international journal mainly devoted to the publication of original studies and research papers in all areas of mathematical analysis and its numerous applications. With my best regards, Emrah Evren Kara Relevant answer Salih Djilali Apr 17, 2019 Answer is the journal support the bifurcation theory papers View 5 Recommendations Is there a method can compete Runge Kutta method. Question 41 answers Apr 11, 2019 Yes, there is a new method which is called Piecewise Analytic Method PAM. It does more than RungeKutta. 1. PAM gives a general analytic formula that can be used in differentiation and integration. 2. PAM can solve highly nonlinear differential equation. 3. The accuracy and error can be controlled according to our needs very easily. 4. PAM can solve problems which other famous techniques can't solve. 5. In some cases, PAM gives the exact solution. 6.. You can see Preprint Piecewise Analytic Method VS RungeKutta Method Comparative Study Also, You can write your comments and follow the update of PAM in the discussion [PAMfi g.png 43.68 KB](#) Relevant answer Wolfgang Jansen Apr 17, 2019 Answer I stopped working in this field nearly 20 years ago. But even than there existed several methods that outperformed RK4 by lengths, the comparison is done on the estimated accuracy obtained by the same number of calls to the ODEs right hand side function. Have a look in the following books Hairer, E. and Norsett, S. P. and Wanner, G.

[Solving Ordinary Differential Equations, Part I Nonstiff Problems](#), Springer Verlag, 1987. Hairer, E. and Wanner, G. [Solving Ordinary Differential Equations, Part II Stiff and Differential Algebraic Problems](#), Springer Verlag, 1991. Somewhere in the middle of the first book is a twosided graphics where the orbits of a specific problem are shown obtained by different methods and the same maximum number of rhs calls. The orbits of the chosen ODE are known from theory to return to the starting point. The impressive fact of the graphics is to show how good this feature is reproduced by the methods applied the orbit of 1step Euler metod leaves the pages and does not return, the orbit of the RK4 method leaves a large gap between start and end points, the orbit of the DP method without stepsize control leaves a small gap, and the orbit of DP with stepsize control leaves no visible gap; even more, the last method needed much less rhs calls. This was state of the art 20 years ago. Maybe that meanwhile better methods have been developed, maybe the initially discussed PAM is one. If you use Matlab then apply ode45 as ODE solver, if your code is in Fortran or C then search the internet for DOPRI5. View 60 Recommendations What are the most powerful and recommended analytical and numerical methods for solving fractional differential equations. Question 41 answers Apr 15, 2019 There are various methods that have been used in solving the fractional differential equations, but I am wondering what are the most powerful and efficient ones that can be applied effectively in solving the fractional differential equations. Relevant answer Mehmet Yavuz Apr 16, 2019 Answer Dear Mohammed K A Kaabar, HAM and HPM coupled with the integral transformations like Laplace, Fourier, etc. View 50 Recommendations How can I get a MATLAB code of numerical methods for solving systems of fractional order differential equations. Question 4 answers Dec 18, 2013.

Relevant answer Seyyed Ali Mousavi Gavvani Mar 29, 2019 Answer please check this link View 4

Recommendations Is there a general method to construct an expansion of these functions about a small parameter. Question 4 answers Mar 24, 2019 For example there exists methods to find expansions of Gauss Hypergeometric Function Binomial Sums, Differential Equation method etc. Relevant answer Mikhail Yu. Kalmykov Mar 24, 2019 Answer When we are talking about expansion the one of the question is in terms of what function we want to get result. Another limitation is that this method is not applicable to some multiple hypergeometric functions when one of summation include negative values. There is my approach, based on the iterative solution of Pfaff system of differential equations Article When epsilon expansion of hypergeometric functions is expressed. This technique is applicable to the expansion of hypergeometric functions of a few variable in terms of multiple polylogarithms relevant for physics, but it is not algorithmically closed since at the some moment problem of expansion is reduce to problem of finding transformation which convert the given set of algebraic functions to set of rational functions. Nevertheless, I have successfully applied this technique to a few function where expansion was not able to construct using another technique. Unfortunately, the further extension and application of this project has not get financial support from external sources and at the present moment it is frozen. Question 13 answers Dec 22, 2018 When plotting a bifurcation diagram in nonlinear dynamics, the axis x displays a given phase parameter. Are there examples in which the phase parameter stands for time passing for example, from the value  $T_0$  to the value  $T_{200}$  seconds, or months, or years. Thanks! To make an example, I was thinking to something like the one in the Figure below, concerning the phase transitions among liquids, solids and gases if you leave, e.g.,

, that the temperature raises of one degree every second, can we say that the axis x displays time apart temperature values. You speak of some in your question. View 15 Recommendations Possible to estimate a control input and enhance it with a sensor value by using a KalmanFilter. Question 3 answers Feb 28, 2019 Hello, I am using a KalmanFilter for a System with a watertank. As you can see, this is just a very easy model and probably not very accurate. So I have a Sensor, and want to decrease the uncertainty in this model by using the sensor to update the flowrate  $Q$ . Therefore I have set  $Q$  as a state. So the Differential Equation for the Flowrate  $Q$  is. Relevant answer Luca Hummel Mar 5, 2019 Answer Hi Michael Short Thank you a lot for your answer. This is exactly what I was looking for and you understood my question perfectly. I will try to implement this soon. Again, thanks for your time investment and the detailed answer. Question 3 answers Feb 27, 2019 Its very similar to modified Bessel function. Question 25 answers Feb 25, 2019 Dear All, I am hoping that someone of you have the First Edition of this book pdf Introduction to Real Analysis by Bartle and Sherbert The other editions are already available online. I need the First Edition only. It would be a great help to me. Thank you so much in advance. Question 17 answers Feb 8, 2016 In the process of simulating a periodic HIS, a FloquetPort needs to be assigned at an appropriate height over the surface. How much is that height supposed to be. So we could eliminate those modes. Therefore, the  $\Lambda$  value should be computed with the lowest frequency of the frequency band. This remains true for dual band systems. You can also use mode calculator in HFSS to check the effects. View 6 Recommendations Learning and teaching differential equations Question 9 answers Nov 8, 2018 Whats essential when it comes to learning, understanding and teaching differential equations. What concepts are important to cover.

And, how to cover them. What does research tells us about all this. Relevant answer Phil B Brubaker Jan 12, 2019 Answer To understand ODEs or PDEs, classes in Engineering and Science are essential. Try the FortranCalculus FC language that got its start by NASAs Apollo Space program that got us to the moon. FC solves Algebraic through Ordinary Differential Equations Equations; Laplace transforms; etc. FC is based on Automatic Differentiation that simplifies computer code to an absolute minimum; i.e., a mathematical model, constraints, and the objective function definition. A halfhour per problem should be enough time to code and execute most math problems. Solves Algebraic Equations through Ordinary Differential Equations, for more visit. Equations may be

implicit, nonlinear, Boundary Value Problems BVP, Initial Value Problems IVP, etc. Question 5 answers Dec 5, 2018 I'm researching about a Timoshenko Beam with a Transverse vibration. The displacements are very small. For a constant velocity, the last term vanishes. View 11 Recommendations Vector fields whose divergence is Gaussian. View 3 Recommendations Unsolvable Nonlinear differential equations. Question 8 answers Nov 20, 2018 Could there be nonlinear ODEs that could not even be solved numerically. I am working on a third order nonlinear problem which is giving accurate results for a given set of initial conditions ICs but for other ICs the matlab ODE solver checked 45 algorithms do not converge. This page can help you to choose better adapted solvers. If none of these solvers works then you may need to write yourself a numerical scheme adapted to your case, probably an implicit or semiimplicit scheme more stable than explicit schemes since matlab solvers don't work. Do you have ideas Thank you very much in advance, Algis Relevant answer P. K. Karmakar Nov 17, 2018 Answer In continuation, what is internal expectation from dynamical insights after your current equation of concern. What is its physical model context.

Thanks to all having participated in this discussion. View 6 Recommendations How to implement tightly coupled nonlinear ODEs using ode45 in matlab. Question 29 answers Nov 11, 2018 I am solving a problem from fluid dynamics; in particular tightly coupled nonlinear ordinary differential equations. The following is a scaled down version of my actual problem. I have solved system of coupled ODEs many times in the past but this case is different since double derivatives of one variable depends on the double derivative of another variable. How do I implement it in ode45. The way ode45 works, I get  $x$  and  $\dot{x}$  as output but not the double derivatives. Any help will be highly appreciated. Congratulations on getting the code to work. Sounds as if it was quite tricky. Re the very slight differences, they could possibly be due to the number of significant figures used. Or it could be that the maximal Lyapunov exponent could occasionally be positive this could be tested by varying very slightly the initial conditions which you used. View 6 Recommendations Newton's Second Law of the third order. Question 50 answers Nov 4, 2018 The function assumes a direct and reverse law. What do we know about the inverse function Never mind. This is just the shadow of the direct function. View 6 Recommendations Do we have any bifurcation that merges two limit cycles to one. Question 16 answers Oct 20, 2018 In nonlinear systems, we know several bifurcations i.e. Saddle node, Pitchfork, Transcritical, and Hopf. View 12 Recommendations Can anyone suggest some articles regarding explicit numerical schemes for fractional order partial differential equations. Question 9 answers Apr 8, 2014 Explicit numerical schemes for fractional partial differential equations. Relevant answer Ahmed A. Hamoud Oct 23, 2018 Answer See attached papers maybe help you Article Numerical methods for the solution of partial differential e. View 4 Recommendations Does there exist periodic Gaussian function.

Question 15 answers May 27, 2015 Is there any way of producing periodic Gaussian pulses such that the bell shape repeats itself with a defined period. Does there exist any solution for some differential equation which resembles the aforementioned function. Question 1 answer Sep 7, 2018 Is there anybody with an insightful note or explanation on how to establish the stability of the solution of ODE bvp using Poincaré-Lyapunov Theorem. Reduction of the bvp to initial values problem and generation of the Lyapunov function do not incorporate the boundary conditions. We believe these are not acceptable. Do you know how to include the Neumann boundary condition into Jacobian matrix or how to generate Lyapunov function suitable to establish the stability of the solution of ODE bvp; see the attached problem. Hence the standard linearisation theorem cannot be directly applied. The main question that you want to address is what does it mean for a solution of a BVP to be stable with respect to what perturbations. So, you need a definition. If the problem comes from a variational formulation based on the energy, then looking at the positive definiteness of the second variation is the standard way to define and prove stability. Intuitively, the question is to see if nearby solutions around a given solution have lower energy. You can see examples in my paper with Thomas Lessinnes that deals with Neuman conditions. In particular we give a full computation for a simple

2nd order system for which we establish stability. Maybe it would be helpful if this is what you have in mind. Otherwise, you will find references in there. The reference is T. Lessinnes and A. Goriely, 2017 Geometric conditions for the positive definiteness of the second variation in onedimensional problems. *Nonlinearity* 30, 2023. And I believe that it can be found on research gate or ask for it. View 30 Recommendations What are the prerequisites of the fractional order controllers theory.

Question 7 answers Oct 27, 2015 I have a problem of understanding the Definitions of the FractionalOrder Calculus which make the foundation of the fractional order controllers. How I can study and understand this theory in a simpler manner. Are there any references simplify the understanding of this theory with numerical examples and figures. Note Im an engineer, and I studied Calculus, differential equations, control theory, and some other math courses. Relevant answer Boddu Muralee Bala Krushna Aug 21, 2018 Answer Dear Islam Zead, I would like to refer the following books for your study Oldham, Keith B.; Spanier, Jerome 1974. *The Fractional Calculus; Theory and Applications of Differentiation and Integration to Arbitrary Order*. Mathematics in Science and Engineering. V. Academic Press. ISBN 0125255500. Miller, Kenneth S.; Ross, Bertram, eds. 1993. *An Introduction to the Fractional Calculus and Fractional Differential Equations*. ISBN 2881248640. Carpinteri, A.; Mainardi, F., eds. 1998. *Fractals and Fractional Calculus in Continuum Mechanics*. SpringerVerlag Telos. ISBN 321182913X. Podlubny, Igor 1998. *Fractional Differential Equations. An Introduction to Fractional Derivatives, Fractional Differential Equations, Some Methods of Their Solution and Some of Their Applications*. Mathematics in Science and Engineering. 198. Academic Press. ISBN 0125588402. West, Bruce J.; Bologna, Mauro; Grigolini, Paolo 2003. *Physics of Fractal Operators*. Springer Verlag. ISBN 0387955542. Kilbas, A. A.; Srivastava, H. M.; Trujillo, J. J. 2006. *Theory and Applications of Fractional Differential Equations*. Amsterdam, Netherlands Elsevier. ISBN 0444518320. Tarasov, V.E. 2010. *Fractional Dynamics Applications of Fractional Calculus to Dynamics of Particles, Fields and Media*. Springer. Daftardargejji, Varsha 2013. *Fractional Calculus Theory and Applications*. Narosa Publishing House. Herrmann, R. 2014. *Fractional Calculus An Introduction for Physicists*. Singapore World Scientific.