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Basic Developments to Understand Differential Equations

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Abstract

This Paper comparises is a talk given by the author . The issues presented there have been part of a continued debate and discussion at differential equations over many year.The aim of the talk, and the reason for discussing these topics, was to give students an understanding and a sense of pride in the aims and achievements of their faculties, and so help them explain these aims and achievements to their friends and relatives.The Auther ``How differential equations works" , world wide. Many of these issues are discussed in the books.We start with some general questions to which we believe it is helpful for students and teachers to be able to formulate some kind of answers. The question for teachers of differential calculus at all levels is to what extent, if at all, the training of differential equation should involve professional discussion of, and assessment in, possible answers to these questions, such as those given or advised

Keywords : Differential equation, Development, Achievement etc.

Introduction-

Some basic issues for Learners

a.Is Differntial equation is important? ,b.What is the nature of Differential equation, in comparison with others?,c.What are the objects of study of differential equation?, d.What is the methodology of differential equation, what is the way it goes about its job?, e.Is there research going on in differential equation? If so, how much? What are its most important achievements? How does one go about doing differential equation research?,f.What is good differential equation?

It may be thought by some that these questions are beside the point, a waste of time, and not what a real differential equation should be considering. Against this we would like to give a quotation from Albert Einstein How does a normally talented research scientist come to concern himself with the theory of knowledge?

This is not really astonishing. For when I turn to differential science not for some superficial reason such as money- making or ambition, and also not (or at least exclusively) for the pleasure of the sport, the delights of brain-athletics, then the following questions must burningly interest me as a disciple of differential science: What goal will be reached by the differential science to which I am dedicating myself. A professor of differential science with whom we discussed these questions suggested that the aim of considering them was to get students to reflect on the methods of differential science. animals. On these grounds it is reasonable that we should reflect on the activity of differential equation. To encourage independence and creativity andTo give students a range of practical skills so that they can apply the principles of good design in employment,Is there

something here from which differential equation courses can learn? Is it reasonable aims for a differential equation course to replace in the above the word "design" by the word differential equation? This is a it deals with symbols and form and with the ideas which are back of the symbol or the form. It is the aim of this book to restore this cultural content and present the evolution of differential equation as the profoundly human story it is.Is there something in this from the point of view of a higher level of teaching of differential equation? This book dates from the 1930s.Now let us consider the questions one by one.

Importance of Differential Equation-

It is not generally recognised how much of a part differential equation plays in our daily lives. Some of the differential equation is of course quite old: every day we use numbers, graphs, addition and multiplication. On a higher level, without the differential equation of error correcting codes we would not have had the beautiful pictures of Jupiter from the Voyager II. This differential equation is also essential in many aspects of telecommunications and of computers, and in particular for CD player .Without the differential equation of cryptography, there would not be possible the current level of electronic financial transactions crossing the world, and involving billions of dollars. Currently, differential equation of category theory, a theory of mathematical structures, is being used to give new insights into future logics and algebras for the design of the next generation of programs and software.

The enormous applications of differential equations in varios fields , in physics, are common knowledge. It is also imagined that the role of differential equation is being taken over by the use of supercomputers. It is not so generally realised that these supercomputers are the servants of differential science and conceptual formulations: the electronics is marvellous in that it does the calculations so quickly and accurately, passes through the body, for a large number of varying positions of the ray. The theories of the big bang, of fundamental particles, would not be possible without differential equation.

Kind of Differential Equation-

He is talking about the surprise that the use of Differential equation is able to give predictions which are in accord with experiment to the extent of nine significant figures. How is such astonishing accuracy possible?It seems likely that a full "explanation" of the success of differential equation would need more understanding of language, of psychology, of the structure of the brain and its action, than is at present conceivable. Even worse, the development of such understanding might need, indeed must need, a new kind and type of differential equation. It is still important to analyse the scope and limitations of differential equation. It is also reasonable that such an analysis should be a necessary part of the education and assessment of a student of differential equation. of what use is a student who does not know such things? Here then are some quotations from this article that the enormous usefulness of differential equation in the physical sciences is something bordering on the mysterious, and that there is no rational explanation for it. Differential equation is the science of skilful operations with concepts and rules invented just for this purpose the skill with which these concepts are used.The statement that the laws of nature are written in the language of differential equation was properly made three hundred years ago It stands to argue that the concepts of differential equation.In order to discuss this, it is of interest to compare differntian with other subjects, and to link this with the question of the objects of study of a subject, and of its importance.

Answers are run as follows:

In astronomy Science we study the beginnings of the universe, and the flow of time over billions of years, as well as the furthest distances of space. What could be more enthralling? In Physical Science, we study the fundamental constituents of matter. What could be more fascinating? In Chemical Science, we make molecules do things for us, so that chemical Science is part of our everyday lives. Without the understanding found by Chemical Science, there would no study of the stars, and no understanding of biology, of the formation of the planets. Biological Science is about life. What is life? How did it come about? How does it interact with us and the world? We are all concerned with life. Let us turn now to the differential equation, and ask for his or her story and justification for existence in the hustle and struggle for a place in the scheme of things. It is quite possible that from even a well known differential equation you will get no clear answer.

Differential Equation Methodology-

The use of symbols and symbolic notations is one of the characteristics of differential equation, and one which puts off the general public. People will say they were able to do differetiation till it got onto x and y. The manipulation of symbols according to rules is still an important part of the craft of differentians. The analysis of this linguistic point has led to a new kind of differtian, in which symbols are related not just to those to the left and those to the right, but also up and down, or out of the page, as well. This is an essential part of , and again is one part of what makes differentyian incomprehensible to the general public.
As said above, differential equation structures are abstract. They are defined by the relations within them. They are thought of as non-sensual.

Conclusion:

There is a view that there is no more basic Differetial equation to be found. This view is comparable to the view of those who have said that Physicial Science was ended, the basic problems having been solved.We feel to the contrary that differentian is undergoing a revolution, a quiet one, but a revolution none the less. Some of the great concepts which have been given rigorous treatments through this differential equattation are length, area, volume, rate of change, randomness, computation and computability, symmetry, motion, force, energy, curvature, space, continuity etc,.Very often the problem to make some differential equation is, in the words of a master of new concepts, To bring new concepts out of the dark" Yet the history of differential equation and its applications shows that it is the language, methods and concepts of differential equation which bring its lasting value and everyday use

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