

DIFFERENTIAL EQUATIONS WITH DERIVE 6

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In this talk we will describe the file **DIFFERENTIAL_EQUATIONS.MTH**, created in DERIVE 6 in order to be used in mathematical subjects which deal with differential equations, aimed at Engineering students. Such file contains a series of programs which permit to solve differential equations problems.

The programs contained in the file can be grouped within the following blocks:

- **First order differential equations:** separable equations and equations reducible to them, homogeneous equations and equations reducible to them, exact differential equations and equations reducible to them (integrating factor technique), linear equations, the Bernoulli equation, the Riccati equation.
- **First order differential equations and n th degree in y' .**
- **Generic programs to solve first order differential equations.**
- **Cauchy problems for first order differential equations.**
- **Higher orders differential equations.**
- **Cauchy problems for higher orders differential equations.**
- **Applications of differential equations.**

We will also show in the talk some examples of applications that have been carried out with our students of Telecommunication Engineering.

The programs have been developed using the ***Display*** function in order to be used as didactical tools with explications of what the programs do step by step, using DERIVE 6 as a Pedagogical CAS (PeCAS) or as a white-box CAS.

Finally, we include the conclusions obtained after using this file with our students and also some future work on this subject.