

Goal and idea - Module 2

GOAL:

Solutions to differential equations are, at their core, functions. However, it's not just the function (or functions!?), it is an appropriate domain of the function(s). Our goal is to study what it means to be a solution of a differential equation.

To do so, we:

- Define what solutions to DEs are, including their interval of existence.
- Study the difference between implicit and explicit solutions.
- Introduce different forms of solutions, including
 - particular solutions,
 - n -parameter families of solutions, and
 - general solutions.
- Finally, we examine how we can graph solutions, and introduce the notion of solution curves.

IDEA:

Whether a function is a solution to a DE or not depends on more than just how its derivatives relate. It also depends on where the function is being defined (i.e., the domain). Exploring this idea is much of this module. The remaining aspects focuses on how we can succinctly describe and write more than one solution at once, and in introducing terminology to distinguish whether a family of solutions exhausts *all* solutions for a DE.

Time: Videos run 44:06 minutes.