Lecture 2.1: Separation of Variables

Matthew Macauley

Department of Mathematical Sciences
Clemson University
http://www.math.clemson.edu/~macaule/

Math 2080, Differential Equations

Introduction

Definition

The order of an ODE is the highest derivative that appears.

Example 1 (exponential growth)

Find all solutions to $y' = ky$.

Exponential decay

Example 2

Find all solutions to $y' = -ky$.

Exponential growth vs. decay

Decay to a limiting value

Example 3

Find all solutions to $y' = k(72 - y)$.