

Objectives

Practice using the method of dominant balance to determine the leading behaviors of solutions of differential equations.

Instructions

Use Mathematica to solve the following problems. Use the template introduced for the previous homework. Write up discussions of your results.

Problems

(Bender & Orszag, Problem 3.33) Find the leading behaviors as $x \rightarrow 0^+$ of the following equations.

1. $x^4 y''' = y$

2. $x^6 y'' = e^x y$

3. $x^4 y'' - x^2 y' + \frac{1}{4} y = 0$