

5.1 Exercises

Problem 1 Find the general solution: $2y'' + 3y' = 0$.

Problem 2 Given the general solution $y(x) = c_1e^{10x} + c_2e^{-10x}$ of a homogeneous second order DEQ, find the DEQ in the form $ay'' + by' + cy = 0$ with constant coefficients.

Problem 3 $y_1 = \sin x^2$ and $y_2 = \cos x^2$ are linearly independent functions, but show that their Wronskian vanishes (is equal to zero) at $x = 0$. Why does this imply that there is no differential equation having both y_1 and y_2 as (global) solutions, of the form $y'' + p_1(x)y' + p_2(x)y = 0$, with both p_1 and p_2 continuous everywhere?