Journal Template

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Abstract

Abstract goes here...

1 Declarations

variable; variable description; $variable \quad domain \quad and \quad range, \quad if \quad applicable$

2 Rule

3 Pre-Derivation and Theorems

Theorem 1. *General n^{th} order differential equation:*

$$a_n y^{(n)} + a_{n-1} y^{(n-1)} + \cdots + a_2 y'' + a_1 y' + a_0 y = g(x)$$
$$(a_n, a_{n-1}, \ldots a_1, a_0) \in k$$

If $g(x) = 0$, differential equation is homogeneous.
If $g(x) \neq 0$, differential equations is not homogeneous.

Theorem 2. *Let $y_1, y_2, \ldots, y_k$ be solutions of the n^{th} order equation on I. Then, per linear combination, $y = c_1 y_1 + C_2 y_2 + \cdots + c_k y_k$ is also a solution where $c_1, c_2, ...c_k$ are arbitrary constants.*

Linear Dependence and Independence

Set theory here

Id Est:
$f_1, f_2, \ldots, f_n$ are said to be linearly dependent on I, if there exists a set of constants $k_1, k_2, \ldots, k_n$, that aren't all zero, such that $k_1 f_1 + k_2 f_2 + \cdots + k_n f_n = 0$ for all x in I.

$f_1, f_2, ...f_n$ are linearly independent if they are not linearly dependent.

4 Derivation

Derivation goes here

5 Exempli Gratia

Examples of important instances