
Engineering Mathematics(2)

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The logo of Kumoh National Institute of Technology is a circular seal. It features a central emblem with a stylized 'K' and 'I' and a 'T' below it. The outer ring of the seal contains the text 'Kumoh National Institute of Technology' in English and Korean. The seal is rendered in a light gray, semi-transparent style.

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Chapter 1. Laplace Transformation

■ 1.1 Introduction

■ Laplace Transformation?

: The Laplace transformation is a method for solving differential equations and corresponding initial and boundary value problems

■ The process of solution

■ <1st step> The given “hard” problem is transformed into a “simple” equation (subsidiary eqn.).

<= by Laplace transformation.

■ <2st step> The subsidiary equation is solved by purely algebraic manipulations.

■ <3st step> The solution of the subsidiary equation is transformed back to obtain the solution of the given problem.

<= by inverse transformation

■ Advantages of the method

(1) The transformation pairs are made easier by tables

(2) It is particularly useful in problem where the (electrical) driving force has discontinuities, for instance, acts for a short time only, or is periodic but is not merely a sine or cosine function (e.g. pulse or periodic square voltage source).

(3) It solves problems directly.

- Indeed, initial value problem are solved without first determining a general solution
 - Similarly, non-homogeneous equations (eqns) are solved without first solving the corresponding homogeneous equation (eqn)
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