邊界元素法1999 第八次作業

1. In the course, we derive the fundamental solution for the second order ODE

$$\frac{d^2u(x)}{dx^2} = \delta(x-s),\ -\infty < x < \infty \tag{1}$$

by using the Hadamard principal value in complex plane.

For the homework, what happens if the second order ODE is changed to the fourth order ODEs as follows:

$$\frac{d^4u(x)}{dx^4} = \delta(x-s),\ -\infty < x < \infty \tag{2}$$

Also, please solve the fundamental solution by using the Hadamard principal value in the complex plane.

2. Summary: methods for solving fundamental solution

(1). subsection method

(2). Variations of parameters — Wronskian

(3). Limiting process for Dirac-Delta function: normal distribution

(4). transform methods by introducing a small term(single pole of residue)

(5). transform methods directly (higher pole of rsidue) — extended residue theorem. (HPV in the complex domain)