

國立台灣海洋大學河海工程研究所 BEM 第 3 次作業

1. In the course, we have derived the one-dimension BEM solution with the Dirichlet boundary condition ($u(0) = 100, u(1) = 0$) using

$$u(s) = u(x) \frac{dU(x, s)}{dx} \Big|_{x=0}^{x=1} - U(x, s) \frac{du(x)}{dx} \Big|_{x=0}^{x=1}$$

by approaching $s \rightarrow 0^+$ and $s \rightarrow 1^-$.

- (1) Please solve the problem by using

$$\frac{du(s)}{ds} = u(x) \frac{d^2 U(x, s)}{dx ds} \Big|_{x=0}^{x=1} - t(x) \frac{dU(x, s)}{ds} \Big|_{x=0}^{x=1}$$

by approaching $s \rightarrow 0^+$ and $s \rightarrow 1^-$.

- (2) Please derive $t(0)$ and $t(1)$ by approaching s outside the range $0 < s < 1$ and using

$$0 = u(x) \frac{dU(x, s)}{dx} \Big|_{x=0}^{x=1} - U(x, s) \frac{du(x)}{dx} \Big|_{x=0}^{x=1}$$