

國立台灣海洋大學 2005 河工系工程數學(二) 第三次作業題目

$$y''(t) + \omega^2 y(t) = r(t) \quad \text{where} \quad F(t) = \begin{cases} 1, & t \in (0, \pi) \\ 0, & t \in (\pi, 2\pi) \end{cases} \quad \text{and} \quad r(t) = r(t + 2\pi)$$

- (a) Find $y(t)$ by using the Fourier expansion.
- (b) Plot the amplitude spectrum of $y(t)$.
- (c) Choice the right answer when cause the phenomenon of Resonance as
- (1) ω is odd numbers.
 - (2) ω is even numbers.
 - (3) ω is integer numbers.
 - (4) The resonance will not occur.