

HOMEWORK #6 (Chapter 12 Orthogonal functions and Fourier series)

In Problem 1-2, find the Fourier series of f on the given interval.

$$(1). f(x) = \begin{cases} 0, & -2 < x < 0 \\ x, & 0 \leq x < 1 \\ 1, & 1 \leq x < 2 \end{cases} \quad (\text{Exercises 12.2 problem 12}).$$

$$(2). f(x) = e^x, \quad -\pi < x < \pi \quad (\text{Exercises 12.2 problem 15}).$$

(3). Find the Fourier series of $f(x) = x$, $x \in [-\pi, \pi]$ and plot.