

Course 2E02 2010 (SF Engineers & MSISS & MEMS)**S h e e t 9**

Due: at the end of the tutorial

Exercise 1

Find the Fourier series of the function

$$f(x) = \begin{cases} -3 & \text{if } -\pi \leq x < 0 \\ 1 & \text{if } 0 \leq x \leq \pi; \end{cases}, \quad -\pi \leq x \leq \pi.$$

Exercise 2

Identify even and odd functions and find their Fourier series for $-\pi \leq x \leq \pi$:

(i) $f(x) = x^2$;

(ii) $f(x) = \begin{cases} x - 1 & \text{if } -\pi \leq x < 0 \\ x + 1 & \text{if } 0 < x \leq \pi. \end{cases}$