

**Course 2E02 2011 (SF Engineers & MSISS & MEMS)****S h e e t 9**

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Due: at the end of the tutorial

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**Exercise 1**

Find the Fourier series of the function

$$f(x) = \begin{cases} 1 & \text{if } -\pi \leq x < 0 \\ -2 & \text{if } 0 \leq x \leq \pi; \end{cases} \quad -\pi \leq x \leq \pi.$$

**Exercise 2**

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

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

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