

Recitation 1 - EECS 451, Winter 2009

Jan 7, 2009

OUTLINE

- Review of Fourier Transform
- Practise problems

Concepts

1. Fourier Transforms
 - Definition
 - Basic Properties
 - Conjugate symmetry

Problems

1. Determine the Fourier transform of the signal $x(t) = \frac{1}{\sqrt{2\pi}}e^{-t^2/2}$.
 - (a) Do you observe anything peculiar about the Fourier transform of this signal?
 - (b) Which other signal exhibits a similar property?
2. Compute the Fourier transform of each of the following signals
 - (a) $x(t) = e^{-|t|} \cos 2t$
 - (b) The signal $x(t)$ depicted in figure 1
3. Fig 2 shows an incomplete Fourier transform of a sinusoidal signal $x(t)$. Determine the signal $x(t)$ using the information given below.
 - (a) $x(t)$ is a real signal comprising of two nonzero frequencies.
 - (b) The value of the signal at time $t = 0$ is 7.
 - (c) The energy of the signal is $1 + 54\pi$

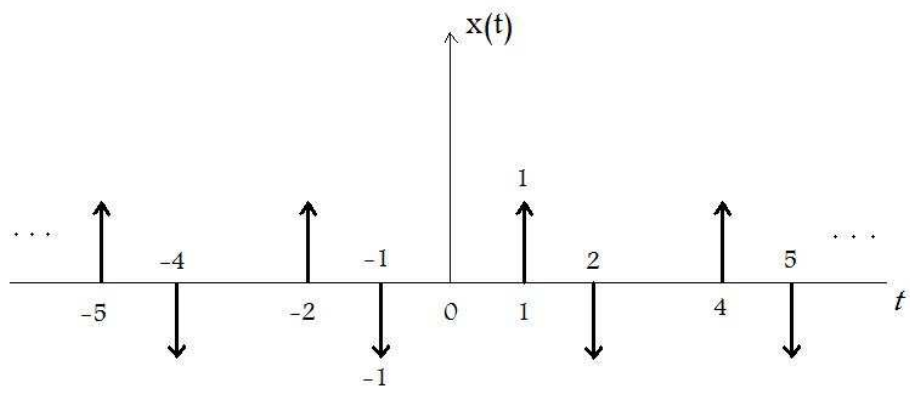


Figure 1:

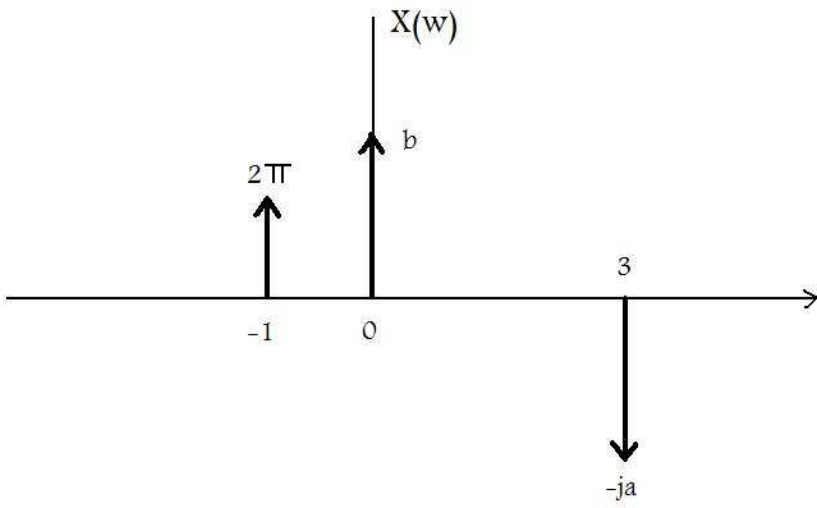


Figure 2: