RC2017 Signals and Systems **Homework 8**
Assign: Fri 29 March 2019 **Due for RC2: Wed 3 April 2019**

Instruction: Hand in your work with name and code to my desk by 10.00 am. of the due date. DO NOT copy homework from your classmates or lend it to others. Anyone who violates this regulation will be given -10 for the homework.

1. Determine the Exponential Fourier Series coefficients for the signal $\varphi(t)$ depicted in Fig. 1 and also plot the Magnitude and phase spectra of the signal.

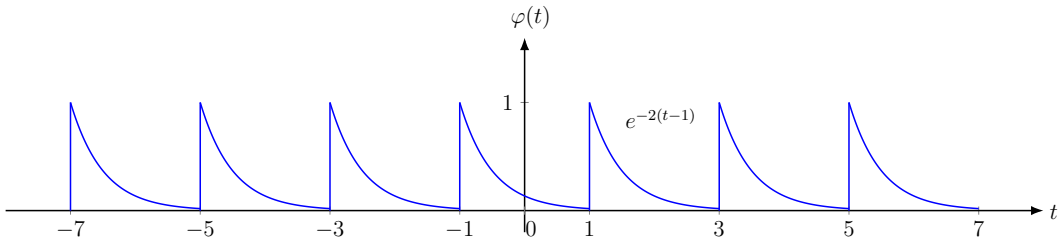
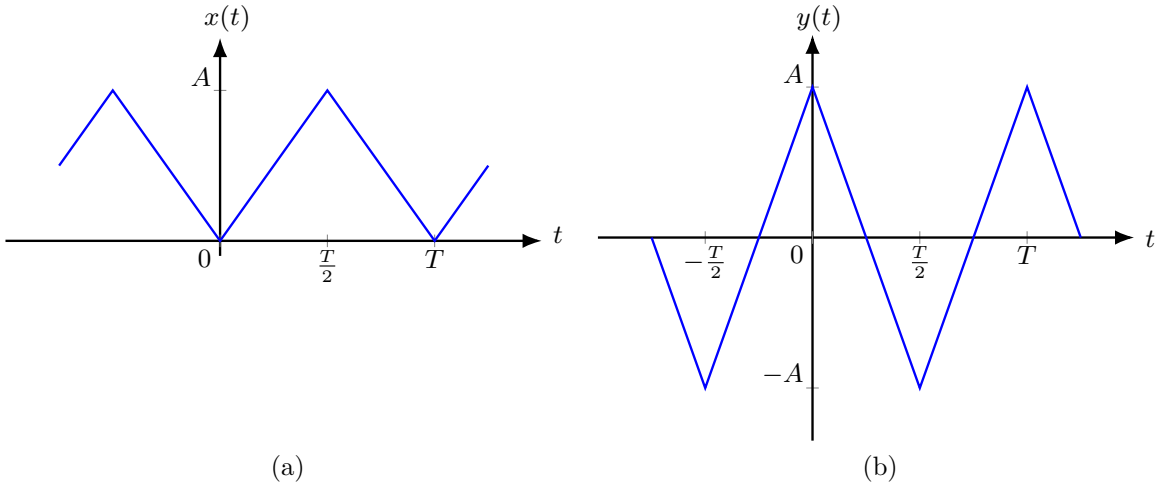


Figure 1: Time-domain signal for the question

2. If the Fourier coefficients D_n of the signal $x(t)$ in Figure 2a is given by

$$D_n = \begin{cases} \dfrac{A}{2}, & n = 0 \\ \dfrac{-2A}{\pi^2 n^2}, & n \text{ odd} \\ 0, & \text{otherwise} \end{cases}$$

Find the Fourier coefficients D_n of the signal $y(t)$ shown in Figure 2b. (10 points)



(a) (b)

Figure 2: Problem 3