

Spring 2019 - Quiz 3

ECE 301: Signals and Systems

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For parts (a) - (h) below, find the Fourier Series coefficients of the given signals.

a $e^{j\omega_0 t}$.

b $\sin(\omega_0 t)$.

c $\cos(2\omega_0 t)$.

d $\sin(\omega_0 t) + \cos(2\omega_0 t)$.

e $x_1(t)$ in Figure 1 (Amplitude is one).

f $x_2(t)$ in Figure 2 (Amplitude is one).

g $x(t) = 1$.

h $x(t) = \sum_{n=-\infty}^{\infty} \delta(t - nT)$ (For a given fixed value of n).

i If a continuous-time periodic signal has finite energy, what does that imply on the convergence of its Fourier Series representation?

j If a continuous-time periodic signal satisfies all three Dirichlet conditions, what does that imply?

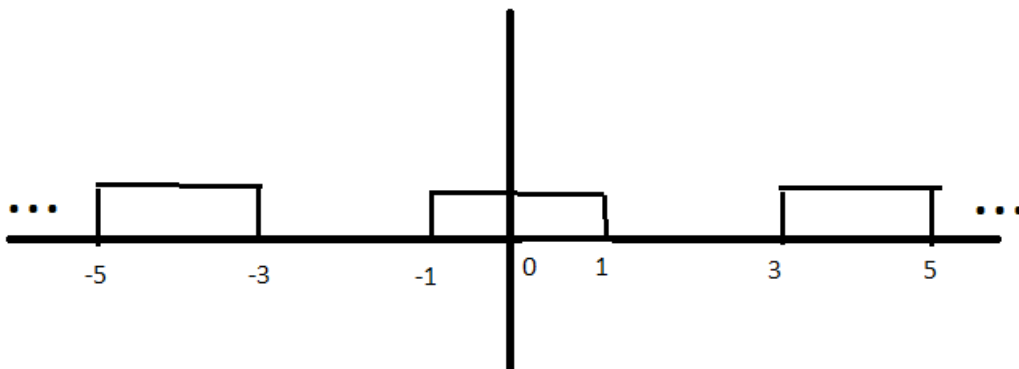


Figure 1: $x_1(t)$

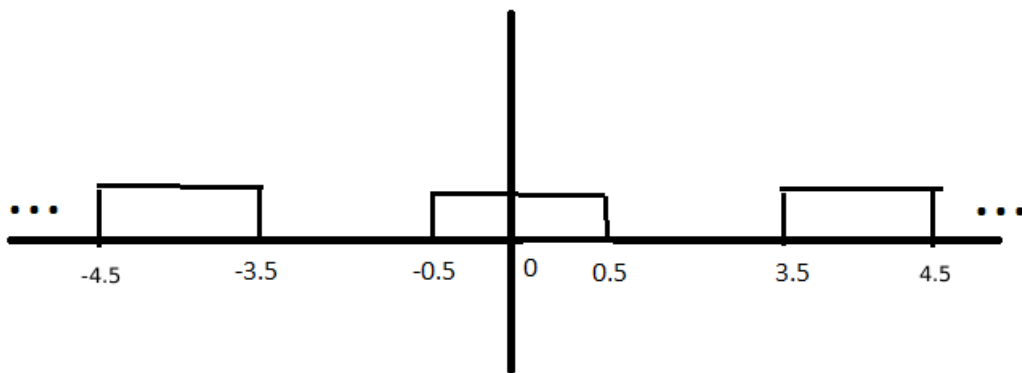


Figure 2: $x_2(t)$