

EE103 HW#5 30Oct2017

5.2. Use the definition of the Fourier transform (5.1) to find the transform of the following time signals:

(a) $f(t) = ke^{-bt} [u(t) - u(t - t_0)], 0 < t_0 < \infty$

(b) $f(t) = A \cos(\omega_0 t + \phi)$

1.

Fourier transform

$$(5.1) \quad \mathcal{F}\{f(t)\} = F(\omega) = \int_{-\infty}^{\infty} f(t)e^{-j\omega t} dt$$

5.6. Find and sketch the Fourier transform of the following time-domain signals:

(a) $Ae^{-\beta t} \cos(\omega_0 t) u(t), \text{Re}\{\beta\} > 0$

(b) $A \sin(\omega_1 t) + B \cos(\omega_2 t)$

2.

5.18. (a) The periodic signal $g_p(t)$ is shown in Figure P5.18. Find and sketch $G_p(\omega)$.

(b) How would the frequency spectrum change if the period of the waveform were doubled?

3.

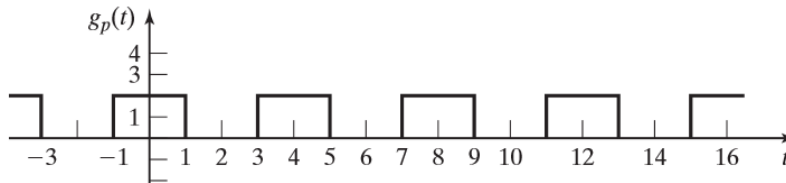


Figure P5.18

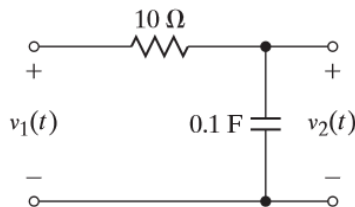
5.12. (a) For the electrical network shown in Figure P5.12, complete the following:

(i) Determine the frequency response function.

(ii) Sketch the magnitude and phase frequency response.

(iii) Find the impulse response function for this network.

4.



(b)

Figure P5.12