

EE103 HW #6 Nov. 6, 2017

1.

5.8. Given

$$e^{-|t|} \xleftrightarrow{\mathcal{F}} \frac{2}{\omega^2 + 1},$$

find the Fourier transform of the following:

(a) $\frac{d}{dt} e^{-|t|}$

(b) $\frac{1}{2\pi(t^2 + 1)}$

Apply the integration form with change of variable.

2.

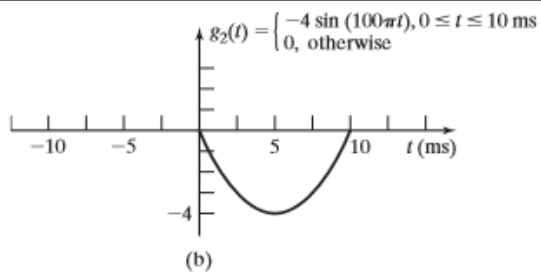
5.14. Determine the Fourier transforms of the signals shown in Figure P5.14. (Use the property tables to minimize the effort.)

Table 5.1

Fourier Transform (FT) of $f_1(t) f_2(t) = F_1 * F_2$

Where F_1, F_2 are FT of $f_1(t)$ and $f_2(t)$

FT of $f(t-t_0)$



Hint: $g_2(t)$ is a product of a sin function and $\text{rect}(t-5 | 10)$

Figure P5.14

3.

6.6. Calculate the frequency response of the circuit shown in Figure P6.6 and determine what type of ideal filter is approximated by this circuit.

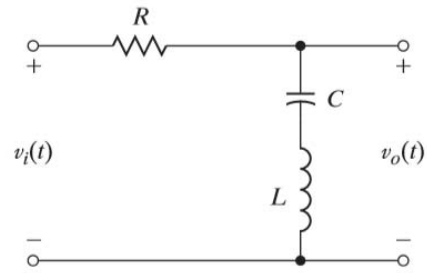


Figure P6.6