6.3-4)
   a)

   \[
   C_n = 3, 2.5, 2, 1.5, 1, 0.5, 0
   \]

   \[
   \theta_n = 0, -30, -60, -90, -120
   \]
c) \[ x(t) = 3 + e^{j(2t-\pi/6)} + e^{-j(2t-\pi/6)} + \frac{1}{2} e^{j(3t-\pi/2)} + \frac{1}{2} e^{-j(3t-\pi/2)} + \frac{1}{4} e^{j(5t-2\pi/3)} + \frac{1}{4} e^{-j(5t-2\pi/3)} \]

d) \[ x(t) = 3 + 2 \cos(2t-\pi/6) + \cos(3t-\pi/2) + \frac{1}{2} \cos(5t-2\pi/3) \]

6.3-7)

a) \[ x(t) = 2 + 2 e^{j(t+2\pi/3)} + 2 e^{-j(t+2\pi/3)} + e^{j(2t+\pi/3)} + e^{-j(2t+\pi/3)} \]
b) $x(t) = 2 + 4 \cos(t + \frac{2\pi}{3}) + 2 \cos(2t + \pi/3)$

c) $x(t) = 2 + 4 \cos(t + 2\pi/3) + 2 \cos(2t + \pi/3)$

d) From part a): $x(t) = 2 + 4 \cos(t + 2\pi/3) + 2 \cos(2t + \pi/3)$

6.3-8)

a) $D_n = \frac{2}{\pi^2 n^2} \left[1 - \cos(\pi n)\right] = \begin{cases} 0 & n \text{ even} \\ \frac{4}{\pi^2 n^2} & n \text{ odd} \end{cases}$

b) $D_n = \frac{2}{\pi^2 n^2} \left[1 - \cos(\pi n)\right] e^{jn\pi/2} = \begin{cases} 0 & n \text{ even} \\ \frac{4}{\pi^2 n^2} e^{jn\pi/2} & n \text{ odd} \end{cases}$

c) The $D_n$ are the same as in part a). $T_0$ is now 4 instead of 8.

6.4-1)

$y(t) = \sum_{n=-\infty}^{\infty} \hat{D}_n e^{jn2t}$, \hspace{1cm} $\hat{D}_n = \frac{0.504}{1 + j4n} \frac{jn2}{(3 - 4n^2) + j4n}$

6.4-2)

a) $x(t) = \left[\frac{j}{4} e^{-j8t} - \frac{j}{4} e^{-j2t} + \frac{j}{4} e^{j2t} - \frac{j}{4} e^{+j8t}\right]$
7.1-4)

a) \[ X(\omega) = \frac{1}{a+j\omega} \left[ 1 - e^{-(a+j\omega)T} \right] \]

b) \[ X(\omega) = \frac{1}{-a+j\omega} \left[ 1 - e^{-(a-j\omega)T} \right] \]

7.1-6)

a) \[ x(t) = \frac{1}{\pi t^2} \left[ (t^2\omega_0^2 - 2)\sin(\omega_0 t) + 2t\omega_0\cos(\omega_0 t) \right] \]

b) \[ x(t) = \frac{2}{\pi} \text{sinc}(2t) + \frac{1}{\pi} \text{sinc}(t) \]

7.2-4)

a) \[ x(t) = \frac{\omega_0}{\pi t} \text{sinc}(\omega_0(t-t_0)) \]

b) \[ x(t) = \frac{1}{\pi t} \left[ 1 - \cos(\omega_0 t) \right] \]