

Las soluciones para los ejemplos

Capítulo 1 - no tiene ejemplos

Capítulo 2

2.5 Problemas, Páginas 38-39

$$\boxed{2.1} \quad T=0.1 \text{ s}, \quad \omega = \frac{2\pi}{T} = 20\pi \quad \text{Para } 0 \leq t \leq T \quad x(t) = -5\frac{t}{T} + 5.$$

$$a_o = \frac{2}{T} \int_0^T (-5\frac{t}{T} + 5) \cdot dt, \quad a_i = \frac{2}{T} \int_0^T (-5\frac{t}{T} + 5) \cos(20\pi t) \cdot dt,$$

$$b_i = \frac{2}{T} \int_0^T (-5\frac{t}{T} + 5) \text{sen}(20\pi t) \cdot dt.$$

$$\boxed{2.2} \quad T = \frac{2\pi}{\Omega}.$$

Para $0 \leq t \leq T/2$ $x(t) = a \text{sen} \omega t$ y para $T/2 \leq t \leq T$ $x(t)=0$

$$a_o = \frac{2}{T} \int_0^{T/2} a \text{sen}(\Omega t) \cdot dt, \quad a_i = \frac{2}{T} \int_0^{T/2} a \text{sen}(\Omega t) \cdot \cos(i\Omega t) \cdot dt,$$

$$b_i = \frac{2}{T} \int_0^{T/2} a \sin(\Omega t) \cdot \text{sen}(i\Omega t) \cdot dt.$$

$$\boxed{2.3} \quad \omega = \frac{2\pi}{T}$$

Para $0 \leq t \leq T/2$ $x(t)=2$ y para $T/2 \leq t \leq T$ $x(t)=-2$

$$a_o = 0, \quad a_i = 0, \quad b_i = \frac{2}{T} \left[\int_0^{T/2} 2 \cdot \text{sen}(i\omega t) \cdot dt + \int_{T/2}^T (-2) \cdot \text{sen}(i\omega t) \cdot dt \right].$$

$$\boxed{2.4} \quad \omega = \frac{2\pi}{T} = 20\pi \quad \text{Para } 0 \leq t \leq T \quad x(t) = -2\frac{t}{T} + 1.$$

$$a_o = 0, \quad a_i = \frac{2}{T} \int_0^T (-2\frac{t}{T} + 1) \cdot \cos(20\pi t) \cdot dt, \quad b_i = \frac{2}{T} \int_0^T (-2\frac{t}{T} + 1) \cdot \text{sen}(20\pi t) \cdot dt.$$

2.5

$$T=20 \text{ ms}=0.02 \text{ s} \quad \omega = \frac{2\pi}{T} = 100\pi,$$

Para $0 \leq t \leq T/2$ $x(t)=2$ y para $T/2 \leq t \leq T$ $x(t)=0$

$$a_o = \frac{2}{T} \int_0^{T/2} 2 \cdot dt = 2, a_i = \frac{2}{T} \int_0^{T/2} 2 \cdot \cos(100\pi t) \cdot dt, \quad b_i = \frac{2}{T} \int_0^{T/2} 2 \cdot \text{sen}(100\pi t) \cdot dt.$$

2.6

$$\omega = \frac{2\pi}{0.0314} = 200 \cdot \frac{1}{s}$$

Para $0 \leq t \leq T/2$ $x(t) = -4\frac{t}{T} + 2$ y para $T/2 \leq t \leq T$ $x(t) = 4\frac{t}{T} - 2$

$$a_o = \frac{2}{T} \left[\int_0^{T/2} \left(-4\frac{t}{T} + 2\right) \cdot dt + \int_{T/2}^T \left(4\frac{t}{T} - 2\right) \cdot dt \right],$$

$$a_i = \frac{2}{T} \left[\int_0^{T/2} \left(-4\frac{t}{T} + 2\right) \cdot \cos(200it) \cdot dt + \int_{T/2}^T \left(4\frac{t}{T} - 2\right) \cdot \cos(200it) \cdot dt \right], \quad b_i = 0$$

2.7

$$T=30 \text{ ms}=0.03 \text{ s}, \quad \omega = \frac{2\pi}{0.03} = 209.4 \cdot \frac{1}{s}$$

Para $0 \leq t \leq T/3$ $x(t) = 5 \text{ kN} = 5000 \text{ N}$ y para

$$T/3 \leq t \leq T \quad x(t) = 2000 \text{ N}.$$

$$a_o = \frac{2}{T} \left[\int_0^{T/3} 5000 \cdot dt + \int_{T/3}^T 2000 \cdot dt \right] = 6000 \text{ N},$$

$$a_i = \frac{2}{T} \left[\int_0^{T/3} 5000 \cdot \cos(209.4it) \cdot dt + \int_{T/3}^T 2000 \cdot \cos(200it) \cdot dt \right],$$

$$b_i = \frac{2}{T} \left[\int_0^{T/3} 5000 \cdot \text{sen}(209.4it) \cdot dt + \int_{T/3}^T 2000 \cdot \text{sen}(200it) \cdot dt \right].$$