Problem A.2:

$x_2(t):$ $T_0 = 20 \rightarrow W_0 = \dfrac{2\pi}{T_0} = \dfrac{2\pi}{20} = \dfrac{\pi}{10}$

$$x_2(t) = \sum_{n=-\infty}^{\infty} D_n e^{jn\frac{\pi}{10}t}$$

$$D_n = \frac{1}{20} \int_{T_0} x_2(t) e^{-jn\frac{\pi}{10}t} dt$$

$$D_n = \frac{1}{20} \int_{-5}^{5} e^{-jn\frac{\pi}{10}t} dt = \frac{1}{20} \int_{-5}^{5} e^{-jn\frac{\pi}{10}t} dt$$

$$= \left[\frac{1}{20} \left(-\frac{10}{jn\pi} \right) e^{-jn\frac{\pi}{10}t} \right]_{t=-5}^{5} = \left[-\frac{e^{-jn\frac{\pi}{10}t}}{j2n\pi} \right]_{-5}^{5}$$

$$= \frac{-e^{-jn\frac{\pi}{2}}}{j2n\pi} + \frac{e^{jn\frac{\pi}{2}}}{j2n\pi} = \frac{1}{n\pi} \left[\frac{e^{jn\frac{\pi}{2}}}{j2} - \frac{e^{-jn\frac{\pi}{2}}}{j2} \right]$$

$$\boxed{D_n = \frac{\sin\left(\frac{\pi}{2}n\right)}{n\pi}}$$

$$D_1 = \frac{\sin\left(\frac{\pi}{2}\right)}{\pi} = \frac{1}{\pi}, \quad D_2 = 0, \quad D_3 = -\frac{1}{3\pi}, \quad D_{-1} = \frac{1}{\pi}, \quad D_{-3} = -\frac{1}{3\pi}$$

are the plugged in values for D_n.