ECE 321 - Homework #28

Fourier Transform

For the following waveforms,

a) Find the Fourier transform for the following waveforms as

$$x(t) \approx a_0 + \sum_{n=1}^{10} a_n \cos(5nt) + b_n \sin(5nt)$$

b) Plot x(t) vs time along with it's Fourier transform approximation taken out to 10 terms

1) $$x(t) = \begin{cases} 1 & \sin(5t) > 0.5 \\ 0 & otherwise \end{cases}$$

2) $$x(t) = \begin{cases} \sin(5t) & \sin(5t) > 0 \\ 0 & otherwise \end{cases}$$

3) $$x(t) = \begin{cases} \sin(5t) & \sin(5t) < 0.8 \\ 0.8 & otherwise \end{cases}$$