EE 206: Homework #11

Fourier Transform and Superposition with Phasors
Due Monday, April 15th

Let Vin be a 100Hz, half-rectified sine wave

$$V_{in} = \begin{cases} 10\sin(628t) & \sin(628t) > 0 \\ 0 & otherwise \end{cases}$$

1) Find y(t) by approximating Vin as

$$V_{in} = a + b\sin(628t)$$

where

- a = average(Vin)
- b = 1/2 of the peak-to-peak votlage of Vin

2) Determine the first 3 terms of the Fourier series approximation for Vin

$$V_{in} \approx a_0 + a_1\cos(628t) + b_1\sin(628t) + a_2\cos(1256t) + b_2\sin(1256t)$$

3) For your result of problem #2, determine y(t)