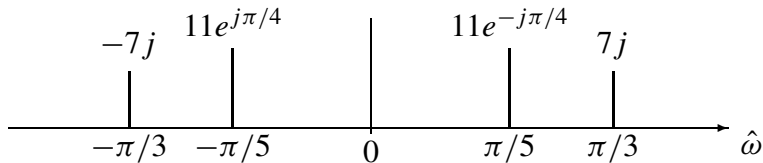


## PROBLEM:

An FIR filter is characterized by the following frequency response:

$$\mathcal{H}(\hat{\omega}) = \frac{\sin(5\hat{\omega})}{\sin(\frac{1}{2}\hat{\omega})} e^{-j5\hat{\omega}}$$

- (a) If the input to the filter is a signal with the following spectrum, determine a formula for the input signal,  $x[n]$  for  $-\infty < n < \infty$ .



- (b) Using the input signal from part (a), determine the output,  $y[n]$  for  $-\infty < n < \infty$ .