PROBLEM:

(a) Make a carefully labeled sketch of the frequency response $H(e^{j\hat{\omega}}) = \dfrac{6\sin(5\hat{\omega}/2)}{\sin(\hat{\omega}/2)}$.

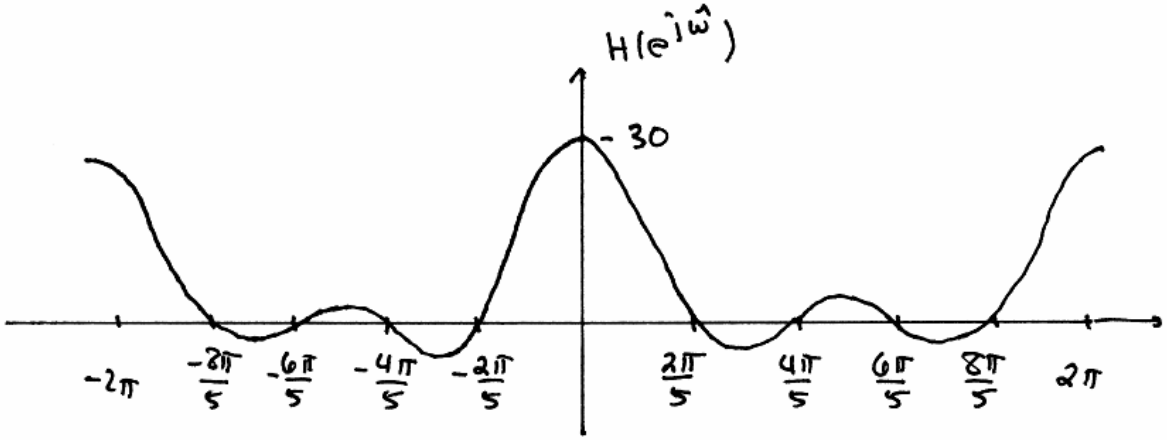
(b) Make a pole-zero plot in the z-plane of the system function $H(z) = \dfrac{1+z^{-2}}{1+z^{-1}}$.

Note: Make sure you include **ALL** poles and zeros.

McClellan, Schafer and Yoder, *Signal Processing First*, ISBN 0-13-065562-7.
Prentice Hall, Upper Saddle River, NJ 07458.

SOLUTION

(a) Make a carefully labeled sketch of the frequency response $H(e^{j\hat{\omega}}) = \dfrac{6\sin(5\hat{\omega}/2)}{\sin(\hat{\omega}/2)}$.



(b) Make a pole-zero plot in the z-plane of the system function $H(z) = \dfrac{1+z^{-2}}{1+z^{-1}}$. **Note:** Make sure you include **ALL** poles and zeros.

$$H(z) = \frac{1+z^{-2}}{1+z^{-1}} = \frac{z^2+1}{z(z+1)} \Rightarrow$$

zeros at $z = \pm j$

poles at $z = 0, -1$