PROBLEM:

For the first-difference filter (used in the Lab)

$$y[n] = x[n] - x[n-1]$$

(a) Derive a simple formula for the frequency response $H(e^{j\hat{\omega}})$. Express your answer as the magnitude and phase versus $\hat{\omega}$.

(b) Make a plot of both the magnitude and phase versus $\hat{\omega}$ over the range $-\pi \leq \hat{\omega} \leq \pi$.