

PROBLEM:

An FIR filter is described by the difference equation:

$$y[n] = x[n] - 2x[n - 1] + x[n - 2]$$

- Find the frequency response $\mathcal{H}(\hat{\omega})$ and express it in polar form (magnitude and phase).
- Carefully sketch and label a plot of $|\mathcal{H}(\hat{\omega})|$ for $-\pi < \hat{\omega} < \pi$.
- What kind of filter is this ? Highpass, lowpass, bandpass, etc.