

PROBLEM:

The complex-valued frequency response for an L -point moving average filter is

$$H(\omega) = \frac{1}{L} \sum_{k=0}^{L-1} e^{-j\omega k} = \frac{1}{L} \frac{1 - e^{-j\omega L}}{1 - e^{-j\omega}}$$

- Derive a formula for the phase of $H(\omega)$ and make a plot.
- Derive a formula for the magnitude of $H(\omega)$ and make a plot.