Problem #1: For each of the algorithms below, calculate the z-transform frequency response \( H(\omega) = \frac{Y(\omega)}{X(\omega)} \). Plot the gain and phase response vs. frequency.

1. 
\[
Y_n = \sum_{m=0}^{4} \frac{X_{m-n}}{5}
\]

2. 
\[
Y_n = Y_{n-1}/2 + X_n
\]

Problem #2: The transfer function of a digital filter is given by

\[
H(z) = \frac{9.2(z^2 + 0.2z - 0.15)}{(z^2 - 0.2z + 0.01)}
\]

Plot the gain and phase shift of the filter vs. frequency.