

Homework 2

1. Consider the FIR filter with the following equation: $y[n] = x[n] - x[n-4]$
 - a). Draw the implementation of the filter
 - b). Find the expressions and draw the amplitude response and the phase response
 - c). Compute the filter response to the following input signal:
$$x[n] = \cos(\pi/2 * n) + \cos(\pi/4 * n)$$

2. Consider a system with a double pole $p_{1,2} = 0.5$ and two zeros at $z_{1,2} = e^{\pm j3\pi/4}$
 - a). Using the geometric method, find the gain G such that $|H(0)| = 1$
 - b). Sketch the amplitude response. What kind of filter is it?