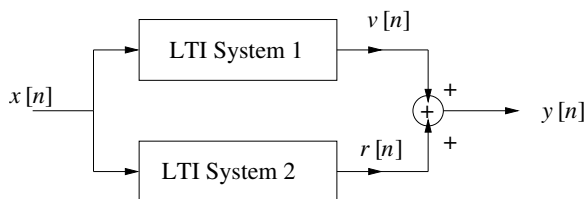


**PROBLEM:**

Consider the parallel form LTI system depicted below.

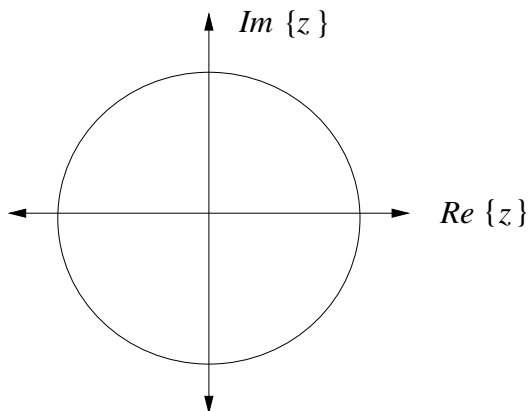


System 1 is defined by the difference equation  $v[n] = x[n] - x[n - 6]$

System 2 is defined by the system function  $H_2(z) = z^{-2} + \frac{1}{3}z^{-3} + z^{-6}$ .

- (a) Determine the system function  $H_1(z)$  associated with System 1 and plot the zeros of  $H_1(z)$ .

$H_1(z) =$



- (b) Determine the impulse response of the overall parallel form system. That is, find  $h[n]$  such that  $y[n] = x[n] * h[n]$ .

$h[n] =$