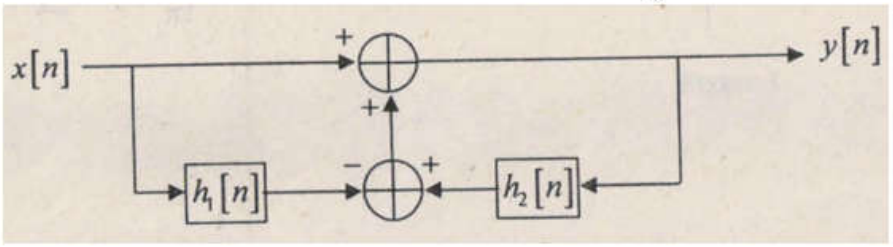
Discussion problem assignment:

第一题：

1. Consider a causal discrete-time system shown in the figure with



$$h_1[n] = (\tfrac{1}{2})^n u[n]$$

$$h_2[n] = \tfrac{1}{2}\delta[n-1]$$

(a) Find the system function $H(z)$ and its ROC

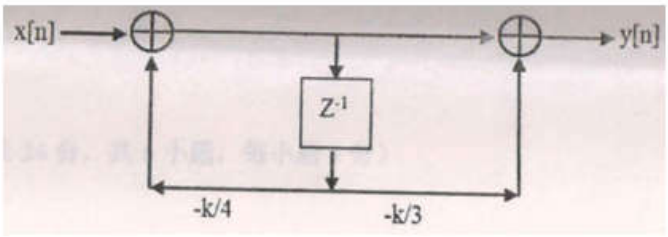
(b) Determine the unit impulse response $h[n]$.

(c) Compute the output of this system if the input signal is

$$x[n] = \cos(\pi n)$$

第二题：

2. Given a causal digital filter structure shown in the figure where k is a real constant



(a) Find the system function $H(z)$ and its ROC

(b) Determine the unit impulse response $h[n]$ if $k = 1$.

(c) For what value of k, is the system stable?