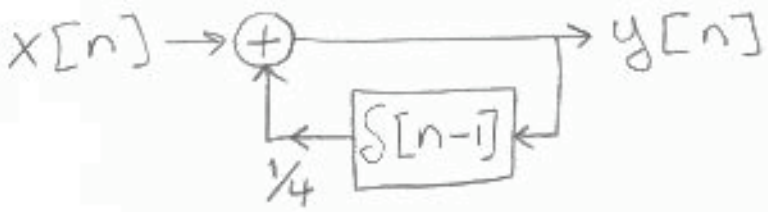
Use 0.7 mm mechanical pencil. Keep 0.25 inch from edge of box.
Scan at 150 dpi to "<Problem Type Acronym>.gif"

dteir 1

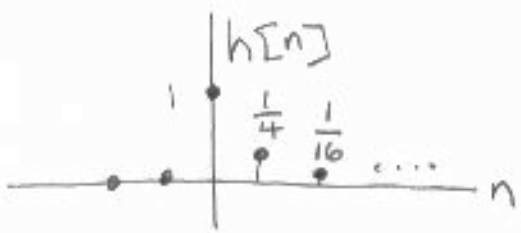
Problem Type Acronym

Question



Answer

$$y[n] = x[n] + \frac{1}{4} y[n-1]$$



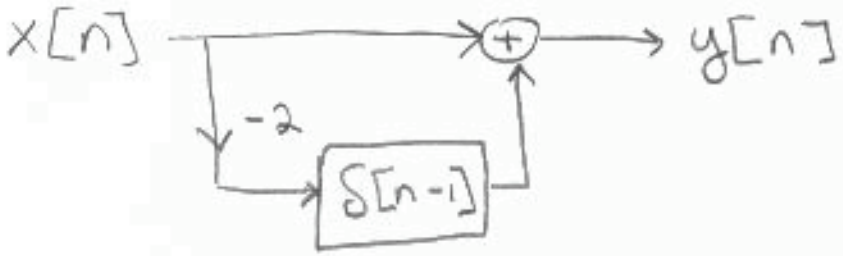
$$h[n] = u[n] \left(\frac{1}{4}\right)^n$$

IIR

Use 0.7 mm mechanical pencil. Keep 0.25 inch from edge of box.
Erase thoroughly. Scan at 150 dpi to "<Problem Type Acronym>.gif"

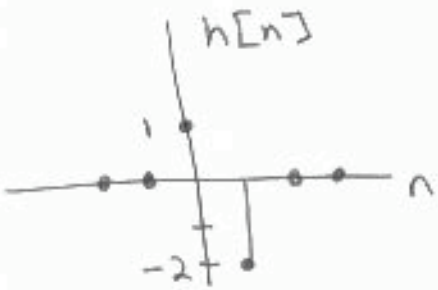
dteir 2
Problem Type Acronym

Question



Answer

$$y[n] = x[n] - 2x[n-1]$$



$$h[n] = \delta[n] - 2\delta[n-1]$$

FIR

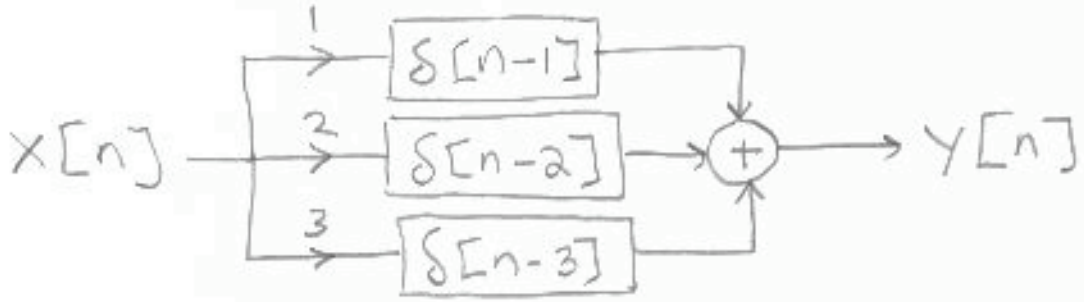
Use 0.7 mm mechanical pencil. Keep 0.25 inch from edge of box. Erase mistakes thoroughly.

DTE1R3
Problem Type Acronym

Name

ID #

Question



Answer

$$y[n] = x[n-1] + 2x[n-2] + 3x[n-3]$$

$$h[n] = \delta[n-1] + 2\delta[n-2] + 3\delta[n-3]$$

FIR

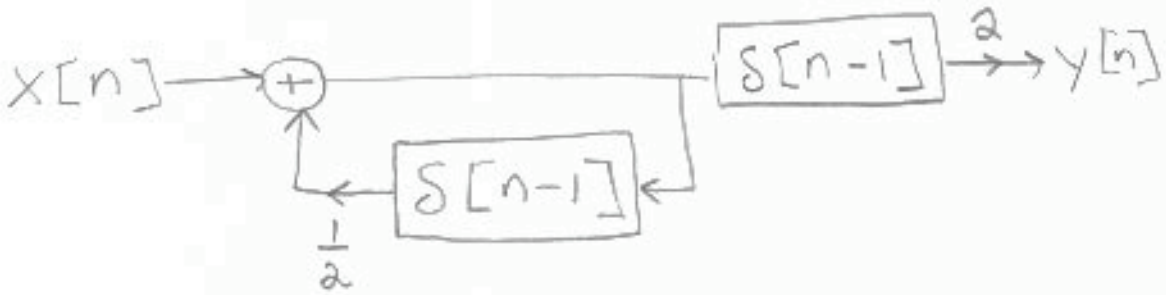
Use 0.7 mm mechanical pencil. Keep 0.25 inch from edge of box. Erase mistakes thoroughly.

DTE1R4
Problem Type Acronym

Name

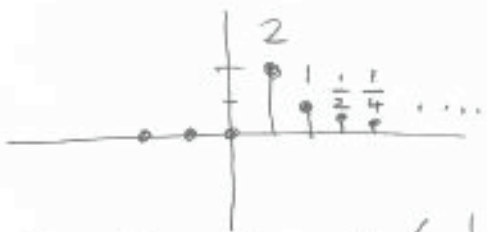
ID #

Question



Answer

$$y[n] = 2x[n-1] + \frac{1}{2}y[n-1]$$



$$h[n] = 2u[n-1]\left(\frac{1}{2}\right)^{n-1}$$

IIR

Use 0.7 mm mechanical pencil. Keep 0.25 inch from edge of box. Erase mistakes thoroughly.

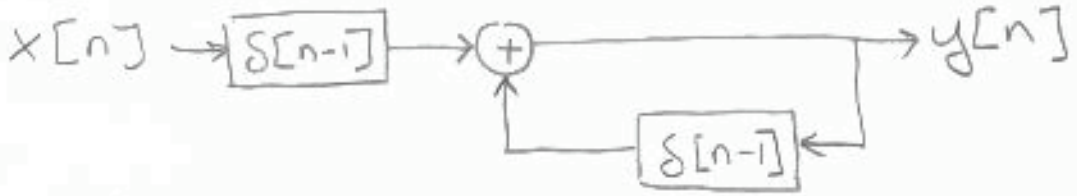
DTE1R5
Problem Type Acronym

Name

ID #

Question

For this system



write the system equation.
Sketch the impulse response h[n].
Is it IIR or FIR?
Write an equation for the impulse response h[n]

Answer

$$y[n] = x[n-1] + y[n-1]$$

IIR

$$h[n] = \sum_{k=1}^{\infty} \delta[n-k]$$

Use 0.7 mm mechanical pencil. Keep 0.25 inch from edge of box. Erase mistakes thoroughly.

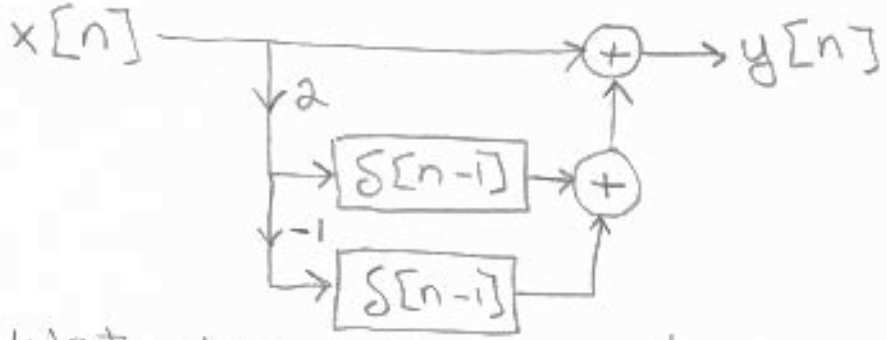
DTEIR6
Problem Type Acronym

Name

ID #

Question

For this system



Write the system equation.
Sketch the impulse response h[n].
Is it IIR or FIR?
Write an equation for the impulse response h[n].

Answer

$y[n] = x[n] + 2x[n-1] - 2x[n-1]$

$= x[n]$

$h[n] = \delta[n]$

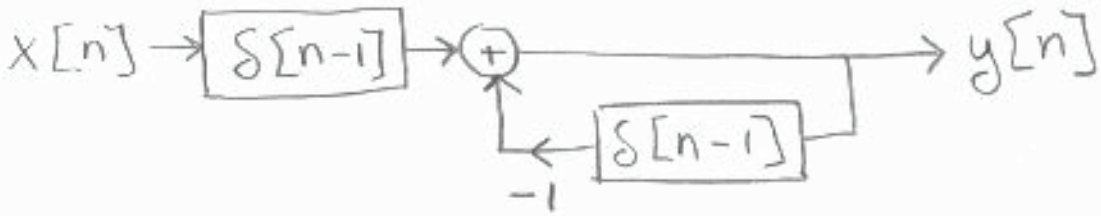
FIR

Use 0.7 mm mechanical pencil. Keep 0.25 inch from edge of box. Erase mistakes thoroughly.

DTEIR7 (Problem Type Acronym) | Name | ID #

Question

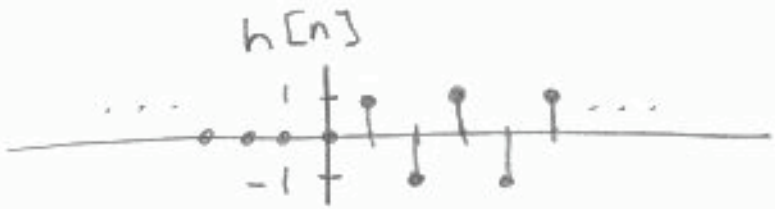
For this system



write the system equation,
sketch the impulse response
is it IIR or FIR?

Answer

$$y[n] = x[n-1] - y[n-1]$$

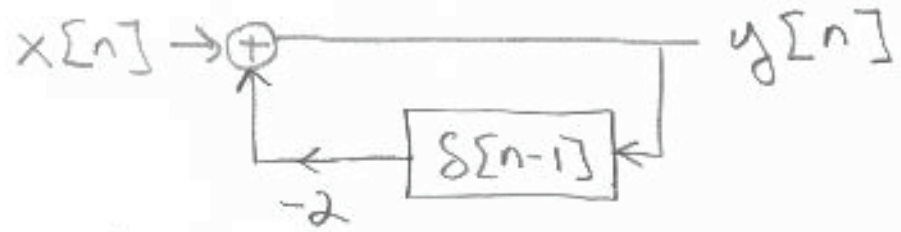


Use 0.7 mm mechanical pencil. Keep 0.25 inch from edge of box. Erase mistakes thoroughly.

DTEIR8 (Problem Type Acronym) | Name | ID #

Question

For the system

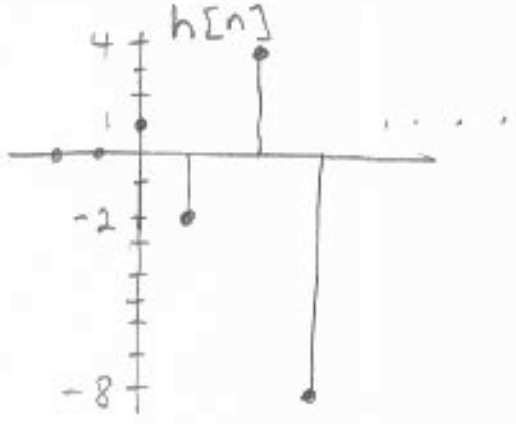


(A) write the system equation.
(B) sketch the impulse response
(C) is it IIR or FIR?

Answer

(A) $y[n] = x[n] - 2y[n-1]$

(B)



(C) IIR

Use 0.7 mm mechanical pencil Keep 0.25 inch from edge of box. Erase mistakes thoroughly.

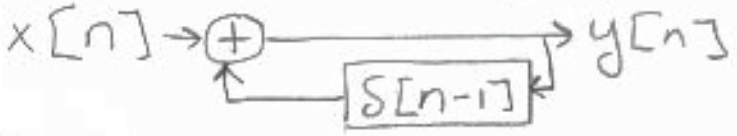
DTE1R9
Problem Type Acronym

Name

ID #

Question

Given the following system



(A) Sketch the impulse response.

(B) Write the system equation relating $x[n]$ and $y[n]$.

(C) Find the Fourier Transform $H(\omega)$ of the impulse response.

(D) At what frequency $-\pi < \omega \leq \pi$ is the system unstable?

(E) What fundamental operation in calculus does this system perform on $x[n]$?

Answer

(A) 

(B) $y[n] - y[n-1] = x[n]$

(C) $\updownarrow F \qquad \updownarrow F$

$Y(\omega) - e^{-j\omega} Y(\omega) = X(\omega)$

$H(\omega) = \frac{Y(\omega)}{X(\omega)} = \frac{1}{1 - e^{-j\omega}}$

(D) $H(\omega) = \infty$ at $\omega = 0$

(E) Integration