3.3 QUIZ QUESTION 1 (1/1 point)

The equations below give the relationship between the input x(n) and the output y(n) of four different channels. Which channel is LTI (Linear Time Invariant)?

Please select the correct answer.

- (•) $y(n) = 6x(n) + 2x(n-1) + 3x(n-2) + 4x(n-3)$ ✔
- ( ) $y(n) = 2x(n) + 5$
- ( ) $y(n) = x(n)^2$
- ( ) $y(n) = x(n) * sin(n)$

EXPLANATION

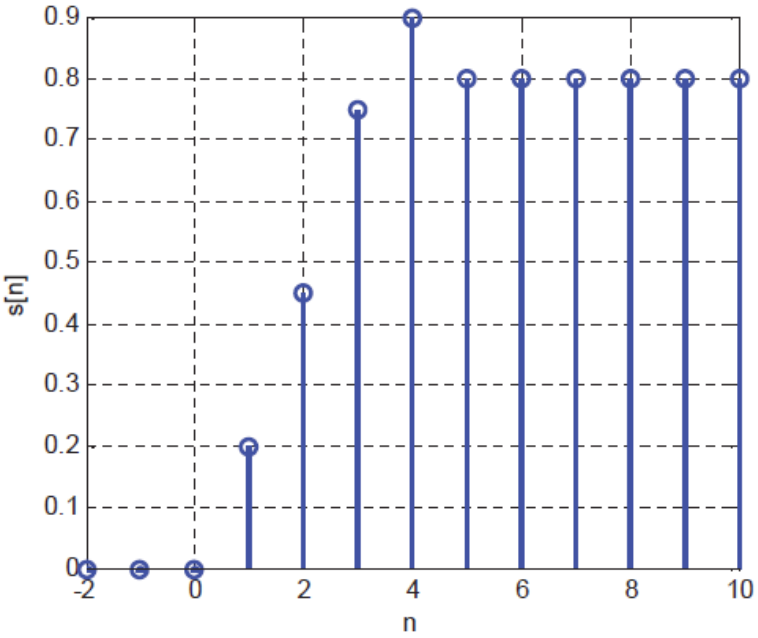
Only the first one is an LTI channel. The second is not linear because of the constant offset + 5. The third is not linear because of the squaring. The fourth is not time invariant because the coefficient sin(n) varies with time.

Final Check | Save | Hide Answer *You have used 1 of 2 submissions*

3.3 QUIZ QUESTION 2 (1 point possible)

The step response of a discrete time LTI system is given below.

Help



If the input applied to this LTI system is given as:

$x(n) = 1, \text{ for } 1 \leq n \leq 3$

and zero otherwise. What is the value of the output at $n = 5$?

Please key in the numerical value of your answer in the box provided below.

3.1

3.1

Answer: 0.7

EXPLANATION

Since $x(n) = u(n-1) - u(n-4)$, by linearity and time invariance, we have that $y(n) = s(n-1) - s(n-4)$. Thus, $y(5) = s(4) - s(1) = 0.9 - 0.2 = 0.7$.

Hide Answer *You have used 3 of 3 submissions*