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Help

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

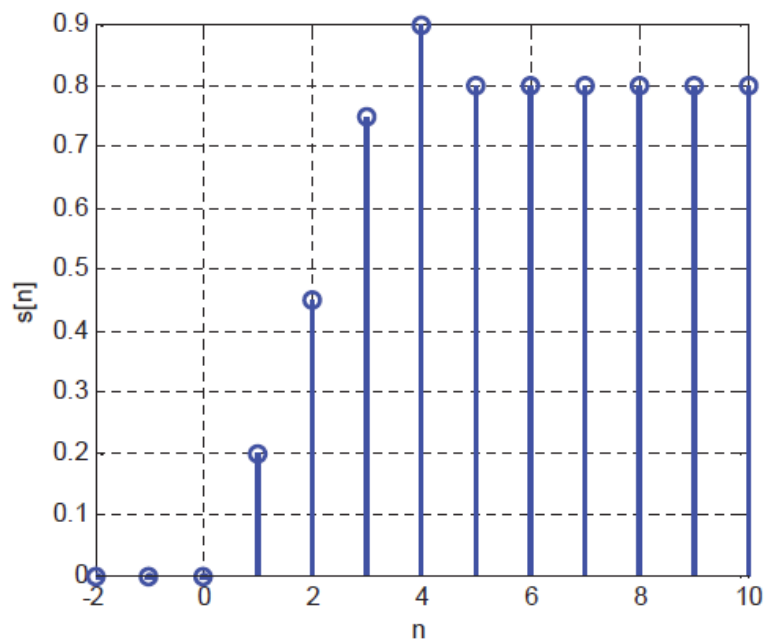
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Hide Answer

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.



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.

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



3.3 Quiz Question 1 | 3.3 Linear Time Invariant Systems
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