

① Sketch:

a)  $x(n] = 3 + u[n-3]$

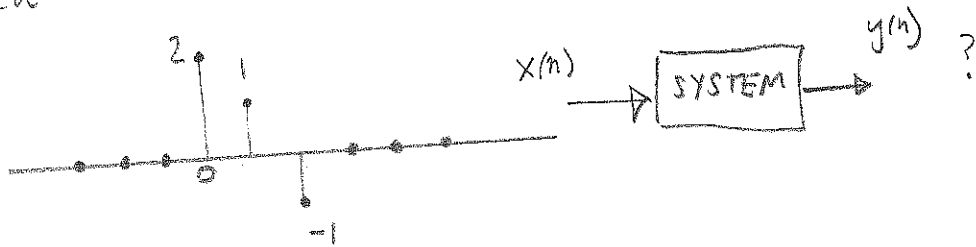
b)  $x[n] = u[n+3] - u[n-2]$

c)  $x[n] = (-1)^n \delta[n-3]$

② A discrete-time system is given by

$$y[n] = 2x[n] + \cos\left(\frac{\pi}{2}n\right)x[n-1]$$

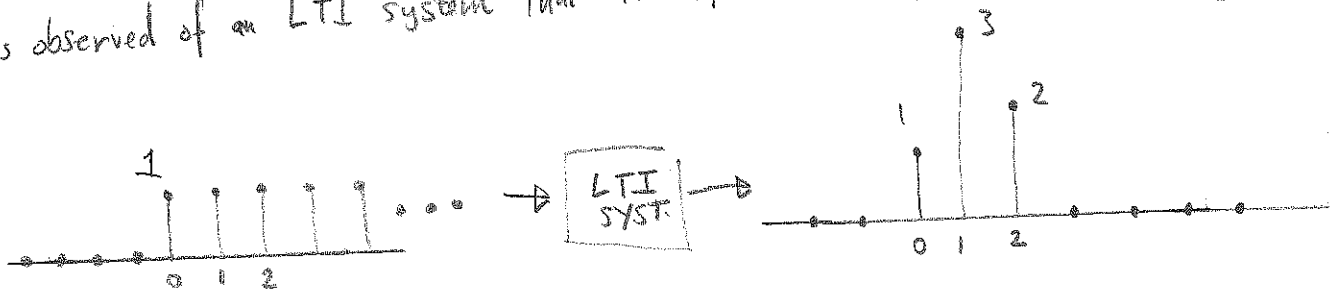
a) Sketch the output  $y[n]$  produced by input signal:



b) Classify the system as

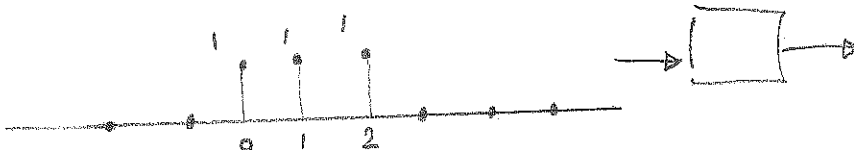
- 1) causal/non-causal
- 2) linear/non-linear
- 3) Time Invariant/Time Varying

③ It is observed of an LTI system that the input shown produces the output shown.



↑ note: the input is the step function

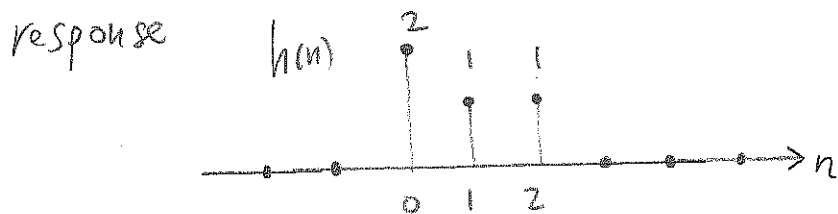
a)



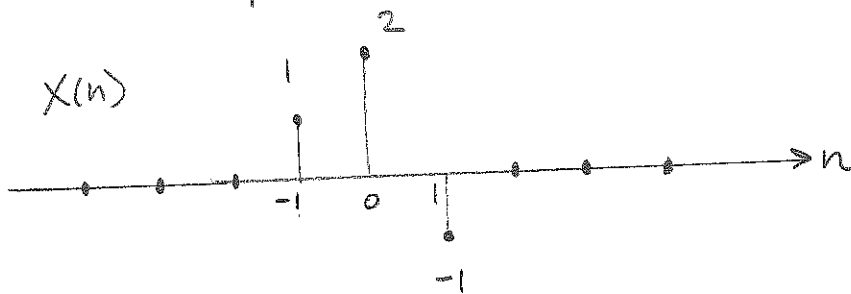
② find the output produced by this input signal.

b) Find the impulse response of the system.

④ An LTI system is known to have impulse response



Sketch the output produced by the input:



$$x(n) \rightarrow \boxed{\text{LTI}} \rightarrow y(n) = ?$$

⑤ convert/simplify to polar form

a)  $1 - j$

b)  $-1 + \sqrt{3}j$

c)  $(2e^{j\frac{\pi}{3}})^2$

d)  $e^{j\frac{\pi}{2}} \cdot e^{j\frac{\pi}{4}}$

⑥ convert/simplify to rectangular form

a)  $2e^{-j\frac{\pi}{2}}$

b)  $3e^{j\frac{\pi}{3}}$

c)  $(e^{j\frac{\pi}{3}})^5$

d)  $e^{j2\pi}$