EE 3054 | Quiz 1 | Spring 2012
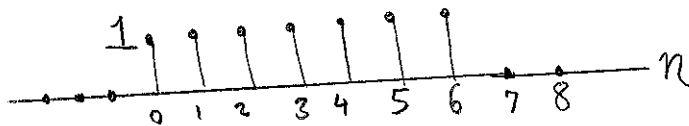
① Sketch the signal $x(n) = 2u(n) - u(n-5) - u(n-8)$

② " " $x(n) = \sum_{k=0}^{\infty} \delta(n-5k)$

③ " $x(n) = \sum_{k=-\infty}^{\infty} (0.9)^{|k|} \delta(n-5k)$

④ A discrete-time system is described by the rule

$$y(n) = \frac{1}{3}x(n) + \frac{1}{3}x(n-1) + \frac{1}{3}x(n-2)$$
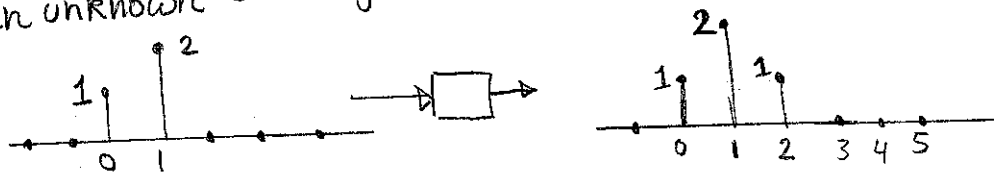
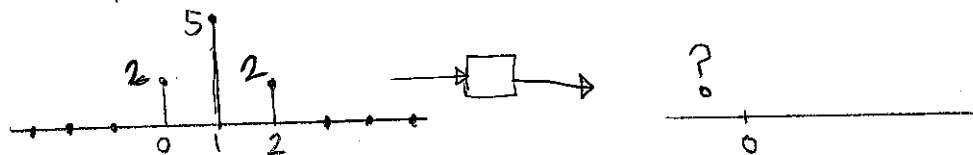ⓐ Sketch the output signal produced by input signal

ⓑ Classify the system as
1) Linear/nonlinear
2) Time-Invariant / time-varying
3) stable/unstable
4) causal/non causal

⑤ Repeat problem ④ for the system defined by the rule $\boxed{y(n) = n \cdot x(n)}$
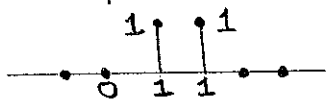
⑥ You observe an unknown LTI system and observe that

Predict the output of the system for input:

⑦ The impulse response of an LTI system is. Find the system output produced by input: