

A System is described by

$$y(t) = H[x(t)]$$

Determine if the systems given below are (note more than one attribute may apply):

- i) Linear
- ii) Causal
- iii) Time-invariant
- iv) Memoryless

1) $y(t) = ax(t - 0.1) + bx(t - 1.0)$

2) $y(t) = ax(t - 0.1) + bx(t + 1.0)$

3) $y(n) = ax(n - 1) + bx^2(n - 10)$

4) $y(t) = a^3 x(t) + bx^2(t)$

5) $y(n) = \sum_{k=0}^2 a_k x(n - k)$

6) $y(n) = \sum_{k=-2}^2 a_k x(n - k)$

7) $y(t) = \int_{-\infty}^{\infty} h(\lambda)x(t - \lambda)d\lambda$