

EECS 360
Homework

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) $y(t) = x(t - 0.1) + 2$

2) $y(t) = ax(t + 0.5) + bx(t - 2.0)$

3) $y(t) = 2x(t - 0.1) + 5x(t - 1.0)$

4) $y(t) = tx(t - 0.1) + bx(t + 1.0)$

5) $y(t) = a^2 x(t) + x^2(t)$

6) $y[n] = \sum_{k=0}^3 a_k x[n-k]$

7) $y[n] = \sum_{k=-1}^2 a_k x[n-k]$

8) $y(t) = \int_{-\infty}^{\infty} h(\lambda)x(t-\lambda)d\lambda \quad h(t) \neq 0$