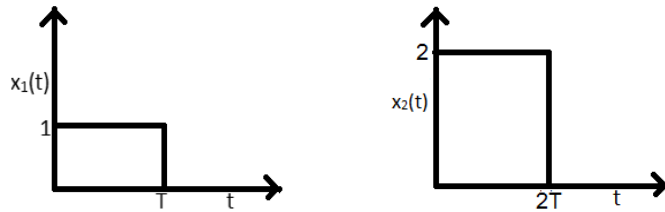1. Given the system be defined by the following equation
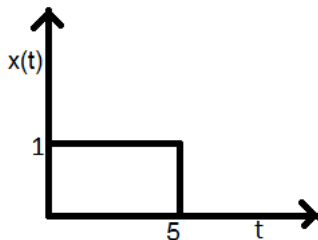
   Y(t) = 2x(t)

   Let us consider $\alpha=2$; $\beta=3$

   The input signals are as follows:

   a) Plot the response of the system by applying

   $\alpha x_1(t) + \beta x_2(t)$ as input

   b) Plot the response by applying $x_1(t)$ and $x_2(t)$ separately , then plot $\alpha y_1(t) + \beta y_2(t)$

   c) Write the inference

2. Consider the system Y(t) = tx(t) where x(t)

   a) Plot the response from t=0 to t=1

   b) Now delay the input by 1 sec, and plot the response

   c) Verify for time invariance from the graph

3. Verify whether the following systems are causal

   a) Y(t) = $\int_{-\infty}^{t+3} x(t)dt$

   b) Y(t) = x(-t)

   c) Y(t) = (2t + 3)x(t)

   d) Y(t) = $|x(t)|$

4. Find the unit impulse response of the first order system that is shown below
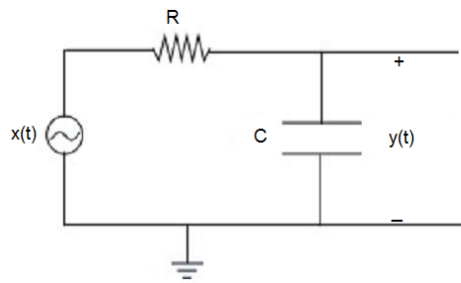
5. Using the convolution integral find the response of an LTI system whose impulse response is given by h(t) = u(t), when the applied input signal is u(t). Also find whether the system is BIBO stable