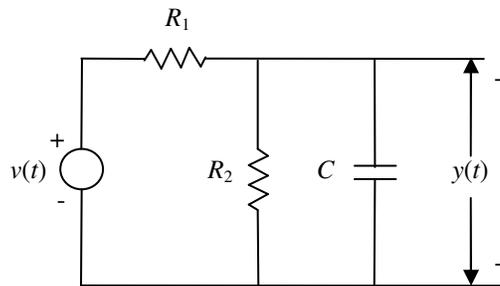


**EE 341 – Exam 1**

1. Determine whether the following system is linear, time-invariant, memoryless, causal, invertible, and stable. The input is  $v(t)$  and the output is  $y(t)$ .



2. The input signal  $x(t) = e^{-t} u(t)$  is applied to an LTC system with impulse response  $h(t) = e^{-t} u(t)$ . Calculate the output  $y(t)$ .
3. The impulse response of an LTIC system is given by

$$h(t) = e^{-|t|}$$

Calculate the transfer function  $H(\omega)$  of the LTIC system and plot the magnitude spectrum  $|H(\omega)|$  of the LTIC system for the range  $(-\infty < \omega < \infty)$ .

4. Calculate the Fourier transform  $X(\omega)$  of the following function:

