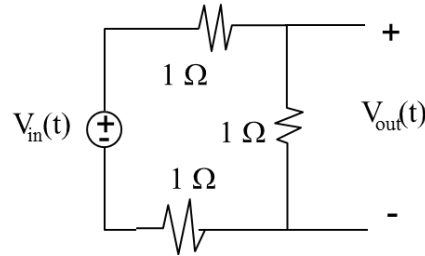


ECE 3337 Sum 2016 Hebert, Homework 11 Due Thurs 7/21

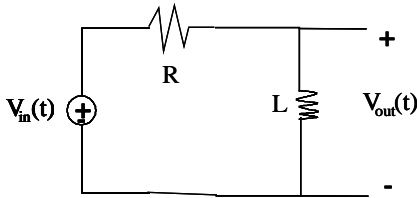
Problem 1. Problem 2-20 in your book – Ziemer

Find the transfer function (Fourier domain);
then take the inverse FT to get the impulse response.



Problem 2. Problem 2-22 in your book – Ziemer

Find the transfer function (Fourier domain); then take the inverse FT to get the impulse response.



Problem 3. Given the input/output system represented by

$$y(t) = 4x(t) - 4x(t - 0.5)$$

where $x(t)$ is the input and $y(t)$ is the output,

- Determine whether the system is linear or non-linear.
- Is the system shift-invariant or shift variant? That is, find the impulse response $h(t, t_0)$ of the system by setting $x(t) = \delta(t - t_0)$, then see if it is factorable into terms of $(t - t_0)$.
- Is the system causal or non-causal?
- Determine the impulse response $h(t)$ of the system by setting $x(t) = \delta(t)$.

Problem 4. Given the input/output system represented by

$$y(t) = 2 \int_{-\infty}^{t-1} x(\gamma - 3) d\gamma$$

where $x(t)$ is the input and $y(t)$ is the output,

- Determine whether the system is linear or non-linear.
- Determine the impulse response $h(t, t_0)$ of the system by setting $x(t) = \delta(t - t_0)$.
- Determine whether the system is time invariant or time variant.
- Determine whether the system is causal or non-causal.