EE 362: Signals and Systems Name:

Spring 2019

Homework #4 (Due: Thursday, February 19, 2019)

- Circle or box your answer (don't forget units).
- **Show** your steps.
- Use 8.5" x 11" paper, and trim off any ragged edges.
- **Staple** your work together and write your name neatly.

(1) For the RLC circuit shown in Figure 1, find the input/output differential equation when the output is the ~~current through the circuit~~ voltage across the resistor, $v_R(t)$, and the input is the voltage source. [5 points]

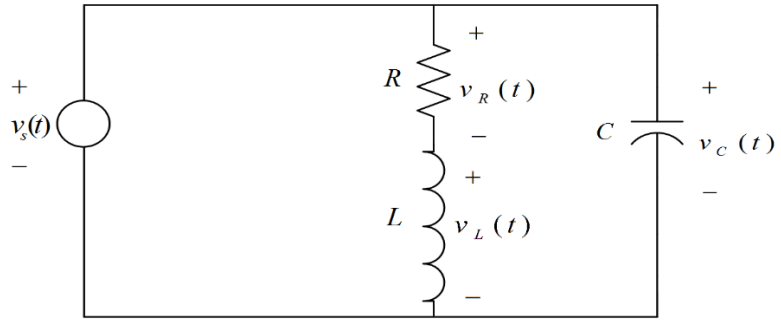


Figure 1. Problem 1

(2) For the continuous-time signals $x(t)$ and $v(t)$ shown in Figure 2, compute the convolution $x(t) * v(t)$ for all $t \geq 0$ and sketch the results. [7 points]

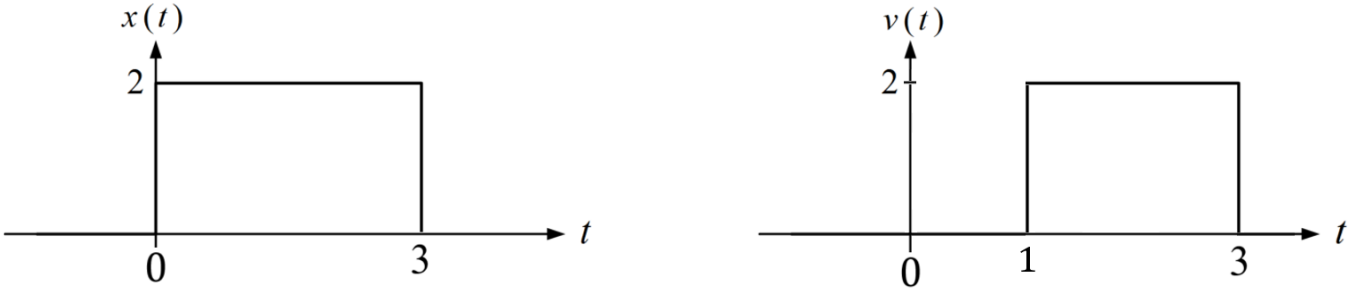


Figure 2. Problem 2

(3) For the continuous-time signal shown in Figure 3, compute the convolution $x(t) * v(t)$ for all $t \geq 0$ using the graphical method and sketch your resulting signal. [10 points]

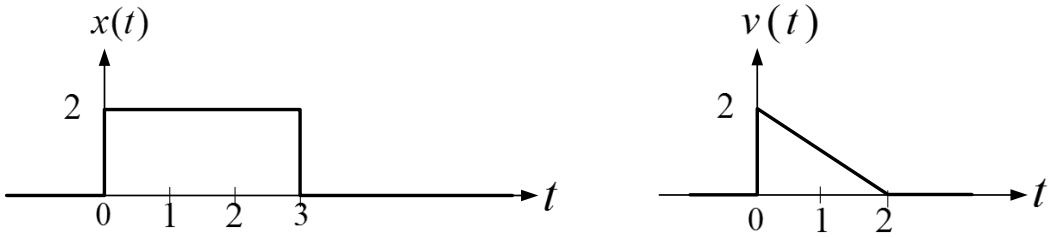


Figure 3. Problem 3