

ECE2311 Homework Assignment Number 5

Due by 10:50am on 20-Apr-2010

Try to do some of these problems each day; don't wait until the last minute. Be sure your name and ECE box appear legibly on the front page. Show all work, and keep your work neat and organized. Whenever appropriate, use *words* to explain what you are doing, not just mathematical symbols. Be sure to justify your answers so the grader can be confident that you aren't just guessing.

1. 4 points. Lathi 7.2-4.
2. 4 points. Lathi 7.3-4.
3. 3 points. Lathi 7.3-10.
4. 4 points. Lathi 7.4-2.
5. 4 points total. Suppose you have the RC circuit shown in Figure 1 below.
 - (a) 2 points. Find $H(\omega)$ for this circuit and take the inverse Fourier transform to find the impulse response $h(t)$.
 - (b) 2 points. Suppose $x(t) = u(t)$. Use Fourier analysis to compute $Y(\omega)$ and $y(t)$. Note that $y(t)$ is the unit step response of the circuit. Compare the $y(t)$ obtained here to the $y(t)$ that you calculated in homework assignment 2 using convolution.

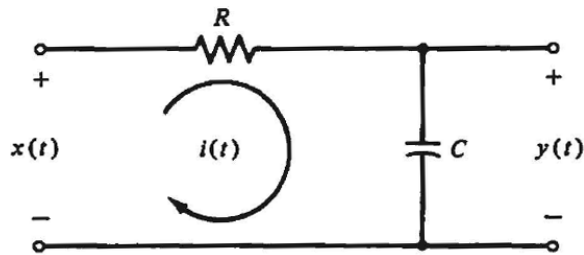


Figure 1: Circuit for problem 5.