

ECE2311 Homework Assignment Number 3

Due by 10:50am on 06-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. 6 points. Lathi 6.1-1 (b), (d), and (e). Write your answers both as regular trigonometric and compact trigonometric Fourier series.
2. 3 points. Lathi 6.1-5.
3. 6 points. Lathi 6.1-7 (a), (b), and (h).
4. 4 points. Given the system shown in Figure 1 with $R = C = 1$, compute expressions for the compact trigonometric Fourier coefficients of the output $y(t)$ given the input $x(t)$ as the periodic square wave shown in Example 6.4 of Lathi. Using Matlab, plot the output using the first two $\{a_0, a_1, a_2, b_1, b_2\}$, ten $\{a_0, \dots, a_{10}, b_1, \dots, b_{10}\}$, and one hundred $\{a_0, \dots, a_{100}, b_1, \dots, b_{100}\}$ Fourier coefficients.

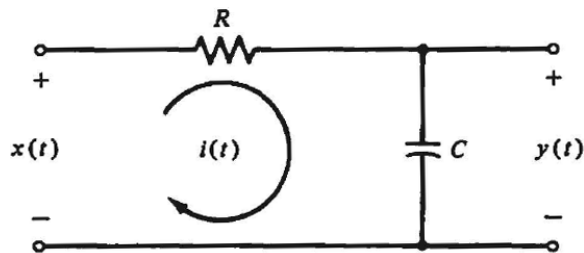


Figure 1: Circuit for problem 4.