Fall 2017 EE 313 Linear Systems and Signals Prof. Evans

Homework #7

# Continuous-Time Signals and Systems

Assigned on Saturday, November 4, 2017

Due on Friday, November 10, 2017, by 12:30 pm via Canvas submission

*Late homework will not be accepted*.

***Reading***: McClellan, Schafer & Yoder, *Signal Processing First*, 2003, Ch. 9.

Companion Web site with demos and other supplemental information: <http://dspfirst.gatech.edu/>

Web site contains solutions to selected homework problems from *DSP First*.

The e-mail address for Ms. Anyesha Ghosh (TA) and her TA office room number are available at

<https://utexas.instructure.com/files/43773591/download?download_frd=1>

Office hours for Ms. Ghosh and Prof. Evans follow, as well as Prof. Evans’ coffee hours on Friday.

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| ***Time Slot*** | ***Monday*** | ***Tuesday*** | ***Wednesday*** | ***Thursday*** | ***Friday*** |
| **9:00 am** |  |  | **Ghosh** |  |  |
| **9:30 am** |  |  | **Ghosh** |  |  |
| **10:00 am** |  |  | **Ghosh** |  |  |
| **10:30 am** |  |  |  |  |  |
| **11:00 am** |  | **Ghosh** |  | **Ghosh** |  |
| **11:30 am** |  | **Ghosh** |  | **Ghosh** |  |
| **12:00 pm** |  | **Ghosh** |  | **Ghosh** | Evans (EER cafe) |
| **12:30 pm** |  | Evans (EER 1.516) |  | Evans (EER 1.516) | Evans (EER cafe) |
| **1:00 pm** |  | Evans (EER 1.516) | Evans (EER 6.882) | Evans (EER 1.516) | Evans (EER cafe) |
| **1:30 pm** |  | Evans (EER 1.516) | Evans (EER 6.882) | Evans (EER 1.516) | Evans (EER cafe) |
| **2:00 pm** |  |  | Evans (EER 6.882) | Evans (EER 6.882) |  |
| **2:30 pm** |  |  |  | Evans (EER 6.882) |  |
| **3:00 pm** |  |  |  | Evans (EER 6.882) |  |

EE 313 tutoring is available on Mondays through Thursdays from 7:00pm to 10:00pm in ETC 4.150:

[http://www.ece.utexas.edu/undergraduate/tutoring](http://www.ece.utexas.edu/undergraduate/tutoring" \t "_blank)

**1. System Properties. *25 points*.**

*Signal Processing First*, problem P-9.2, page 279.

**2. Dirac Delta. *25 points.***

*Signal Processing First*, problem P-9.4, page 279. For part (a), use

Please do parts (b), (c) and (d) as they appear in problem P-9.4.

Simplify expressions involving the Dirac delta under integration, but please refrain from simplifying expressions involving the Dirac delta when it is not being integrated.

**3. Continuous-Time Convolution. *25 points.***

*Signal Processing First*, problem P-9.15, page 281.

1. **Child of Continuous-Time Convolution. *25 points.***

*Signal Processing First*, problem P-9.8, page 280.

As stated on the course descriptor, “Discussion of homework questions is encouraged. Please be sure to submit your own independent homework solution.”

NOTE: In your solutions, please put all work for problem 1 together, then all work for problem 2 together, etc. Please see additional homework guidelines on the homework page.