Math 584
Problem set 4, due March 21, 2017
Dr. Epstein

Reading: Read sections 5.1, 5.2, 5.3, and 6.1. You are free to use MATLAB (or Mathematica, etc.) to help you do these problems.

Here are some "standard" problems from the textbook. You should do them, but do not have to hand them in.

(1) 5.1.1
(2) 5.2.6

The solutions to the following problems should be written up and handed in:

(1)   Do problem 5.1.6 from the text.
(2)   Do problems 5.1.3, 5.1.9, 5.1.11 from the text.
(3)   Do problems 5.1.12, 5.1.13 from the text.
(4)   Suppose that $f(x)$ is a function defined on $\mathbb{R}$ whose Fourier tranform does not vanish anywhere. Show that the Fourier transforms of the repeated convolutions

$$f_j(x) = f \underset{j-\text{times}}{* \cdots *} f(x)$$

are also nowhere vanishing.
(5)   Do problem 5.2.1 from the text.
(6)   Do problem 5.3.1 from the text
(7)   Do problem 5.3.7 from the text.
(8)   Do problems 6.1.1, 6.1.5 from the text.