

## Problem Set 6

**Due:** Tuesday, October 20, 2009, at 11:59 pm.

1. Taylor, 5.27
2. Taylor, 5.49
3. Taylor 5.50
4. Taylor, 5.53
5. Taylor 5.56
6. Calculate the exponential Fourier transform of

$$f(t) = \begin{cases} 1 & -1 < t < 1 \\ 0 & |t| > 1 \end{cases} \quad (1)$$

Use this to obtain the response of a damped oscillator to a forcing function of form  $F(t) = F_0 f(t)$ .

7. Calculate the exponential Fourier transform of

$$f(t) = \begin{cases} |t| & |t| < 1 \\ 0 & |t| > 1 \end{cases} \quad (2)$$

8. Use the Green's method of solution to obtain the response of a damped oscillator to a forcing function of form

$$f(t) = \begin{cases} 0 & t < 0 \\ f_0 e^{-\gamma t} \sin \omega t & t > 0. \end{cases} \quad (3)$$