

EE322 Fall 2012 Homework Problem Set 25 (PS25)

1. Using the definition of the Fourier transform (equation 10.2 on page 342), determine the Fourier transform for $x(t) = \text{rect}(10t)$. Simplify your answer so that it is in terms of a *sinc* function. Use MATLAB to plot the magnitude and phase (in degrees) in a 2x1 subplot. Be sure to label your axes, and include a grid. Plot your answers using a frequency vector $f = -100:0.01:100$. Why does the phase plot look like it does?

How does this answer and the answer you should have gotten for problem 1 in PS23 (the Harmonic function for $\text{rect}(10t)$) compare?

2. Using the definition of the Fourier transform (equation 10.2 on page 342), determine the Fourier transform for the signal shown below. Use MATLAB to plot the magnitude and phase (in degrees) in a 2x1 subplot. Be sure to label your axes, and include a grid. Plot your answers using a frequency vector $f = -10:0.01:10$.

