

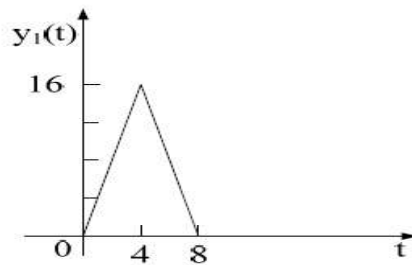
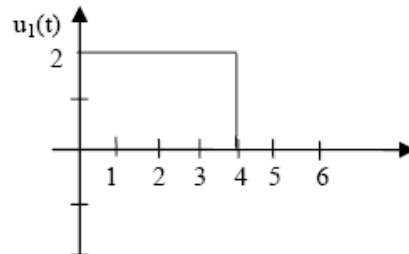
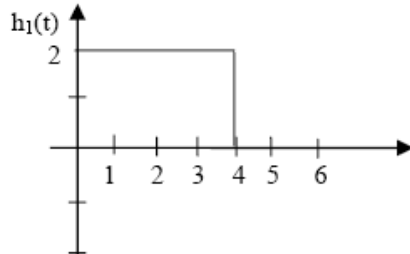
University of Kentucky
Department of Electrical and Computer Engineering

EE421G: Signals and Systems I – Fall 2007 (Quiz 2)

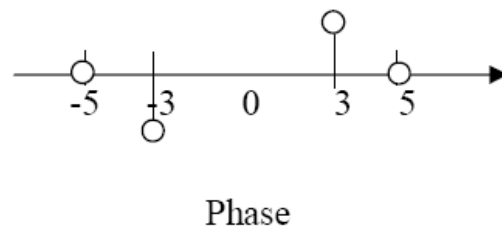
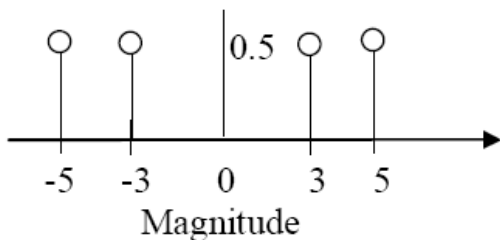
Name: _____

You are allowed to use your books and notes. You must do your own work or you will receive no points. You have 20 minutes to do this quiz.

- 1) (4 points) Draw the convolution between the following two signals.



- 2) (4 points) Consider the signal $f(t) = \cos\left(3t + \frac{\pi}{2}\right) + \sin\left(5t + \frac{\pi}{2}\right)$. Draw the magnitude and phase spectrums.



- 3) (2 points) What is the energy of the following periodic signal?

$$x(t) = 3 - 2 \cos 6t + \pi \sin 9t$$

The fundamental frequency is the greatest common divisors of all frequencies which is 3 rad/s. The Fourier series representation is $x(t) = 3\exp(j0t) - \exp(-j6t) - \exp(j6t) - j\pi/2\exp(j9t) + j\pi/2\exp(-j9t)$. The energy is just the sum of the magnitude square of the coefficients = $11 + \pi^2/2$