

Name: \_\_\_\_\_

1

**Quiz 5, Monday, October 9, 2006**  
ECE 598 AL  
THE SPEECH CHAIN

**Problem 1 (2 points)**

Find  $\Re\{p(t)\}$ , the time-domain waveform corresponding to the following phasor:

$$\mathbf{p} = 1 + j$$

**Problem 2 (8 points)**

Our classroom is about 6 meters wide and 10 meters long. Your instructor stands in the center of the front of the room, one meter away from the wall. Suppose that you are sitting directly in the center of the room.

- (a) Find the delays and scaling coefficients of the direct sound, and of any one echo.

Name: \_\_\_\_\_

2

(b) Suppose that the instructor bangs an eraser on the table, creating a loud impulse. Sketch  $h(t)$ , the impulse response recorded at your seat. Assume that there is only one echo.

(c) Suppose that the instructor plays a flute at frequency  $\omega$ . Write an equation for  $H(\omega)$ , the frequency response, assuming that there is only one echo.

(d) Evaluate the magnitude and phase of the frequency response at frequency  $f = 1000\text{Hz}$ .