

## EECS20n, Quiz 4, 12/1/00

Last Name \_\_\_\_\_ First \_\_\_\_\_ Lab \_\_\_\_\_ TA's name \_\_\_\_\_

**Show your work.**

1. **6 points** Suppose  $x$  has CTFT  $X$ . For  $i = 1, 2, 3$  express the CTFT  $Y_i$  of  $y_i$  in terms of  $X$ , where  $\forall t$

$$y_1(t) = x(t - 1), \quad y_2(t) = x(t) \cos(2\pi \times 100,000t), \quad y_3(t) = x(2t).$$

Write your answer below:

$$Y_1(\omega) =$$

$$Y_2(\omega) =$$

$$Y_3(\omega) =$$

2. **5 points** Consider the discrete time signal  $h$ , where  $\forall n \in \text{Ints}, h(n) = 2^{-|n|}$ . Calculate its DTFT  $H$ . What is  $H(2\pi)$ ?

3. **5 points** Suppose  $x$  has CTFT  $X(\omega) = 2\delta(\omega) + \delta(\omega - 2) + \delta(\omega + 2)$ . Then,  $\forall t$ ,  
 $x(t) =$