

EECS20n, Quiz 7, 11/16/04

The quiz will take 10 minutes. Write your response on the sheet. Print your name and lab time here:

Last Name _____ First _____ Lab time _____

1. **5 points** Find the frequency response H for the difference equation

$$y(n) = y(n - 1) + x(n).$$

Find a difference equation whose frequency response is

$$\forall \omega, \quad H(\omega) = \frac{1 + 2e^{-i\omega} + e^{-i2\omega}}{1 + e^{-i\omega}}$$

2. **5 points** For the periodic signal x of the figure below determine its exponential Fourier Series,

$$\forall t, \quad x(t) = \sum_{k=-\infty}^{\infty} X_k e^{ik\omega_0 t}.$$

Hint The coefficients are (period $p, \omega_0 = 2\pi/p$):

$$X_k = \frac{1}{p} \int_0^p x(t) e^{-ik\omega_0 t} dt.$$

