

EECS20n, Quiz 5, 4/24/00

The quiz will take 15 minutes. Do your calculations on the sheet. There are two problems, **so be sure to check the back.**

Please print your name here:

Last Name: _____ First: _____ Lab time: _____

1. Consider the periodic continuous-time signal given by

$$\forall t \in \text{Reals}, \quad x(t) = \cos(\pi t/5) + \cos(3\pi t/10).$$

Assume t has units of seconds. Find the fundamental frequency ω_0 and the Fourier series coefficients X_k in the Fourier series expansion,

$$x(t) = \sum_{k=-\infty}^{\infty} X_k e^{i\omega_0 k t}.$$

Give the units of the fundamental frequency, and be sure you give *all* the Fourier series coefficients (yes, I know, there are an infinite number of them).

2. Consider a continuous-time LTI system with frequency response

$$H(\omega) = \cos(10\omega).$$

Assume the input is x given in part 1. Find the output y .