

EECS20n, Quiz 7, 04/23/04

Last Name _____ First _____ Lab time _____

Recall the definitions of DTFT and CTFT:

$$x \in \text{DiscSignals} \rightarrow \forall \omega \in R, X(\omega) = \sum_{-\infty}^{\infty} x(k)e^{-i\omega k}$$

$$X \in \text{ContPeriodic}_{2\pi} \rightarrow x(k) = \frac{1}{2\pi} \int_0^{2\pi} X(\omega)e^{i\omega k} d\omega$$

$$x \in \text{ContSignals} \rightarrow \forall \omega \in R, X(\omega) = \int_{-\infty}^{\infty} x(t)e^{-i\omega t} dt$$

$$X \in \text{ContSignals} \rightarrow \forall t \in R, x(t) = \frac{1}{2\pi} \int_{-\infty}^{\infty} X(\omega)e^{i\omega t} d\omega$$

1. If $x \in \text{ContSignals}$ is given by $\forall t \in R, x(t) = \delta(t - 1)$, its CTFT is

$$\forall \omega, X(\omega) =$$

2. If $X \in \text{ContSignals}$ is given by $\forall \omega \in R, X(\omega) = \delta(\omega - 20) + \delta(\omega + 20)$, its InverseCTFT is

$$\forall t, x(t) =$$

3. If $x \in \text{DiscSignals}$ is given by $\forall k \in \text{Ints}, x(k) = (0.5)^k, k \geq 0; x(k) = 0, k < 0$, its DTFT is

$$\forall \omega, X(\omega) =$$

4. If $X \in \text{PeriodicSignals}_{2\pi}$ is given by $\forall \omega \in R, X(\omega) = 1$, its InverseDTFT is

$$\forall k, x(k) =$$