

ECE113, Winter 2023

Digital Signal Processing

University of California, Los Angeles; Department of ECE

Quiz #16

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10 points total.

Name: _____

UID: _____

1. (10 points) In the previous lecture, we saw that the Z-transform of the sequence $x_1[n] = a^n u[n]$ and $x_2[n] = -a^n u[-n-1]$ both mapped to the same Z-transform $X(z)$. Now, you are given another sequence $h[n]$ whose Z-transform $H(z)$ is equal to $X(z)$. What additional information do we need to find whether $h[n]$ is equal to $x_1[n]$ or $x_2[n]$?

Solution:

The correct answer is that one also needs to know the region of convergence (ROC) of the Z-transform $H(z)$.

Another acceptable but not preferred answer would be to mention if the signal is causal or anti-causal.