Classwork 22
FA24
UAH
CPE 381
Instructor: Rahul Bhadani

Name of the Student:

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Total Marks: 10 points

① Determine the z-transform of $x[n] = \left(\frac{1}{2}\right)^n u[n-3]$, and write down its ROC. (5 point).

(2) If a discrete-time signal $x[n]$ has discre transfer function $X(z)$

then for a signal $x[n-A]$, its transfer function is $z^{-A}X(z) + x[-1]z^{-A+1}$

for an integer A.

For for causal systems, $x[-1]=0$

and thus $x[n-A] \longleftrightarrow z^{-A}X(z)$

Using this identity, find the discrete transfer function of the system given by

$$y[n] = y[n-1] - y[n-2] + x[n]$$

where $y[n]$ is the output and $x[n]$ is the input, consider the system as causal. (5 points)

Remember;

transfer function $H(z) = \frac{Y(z)}{X(z)}$.