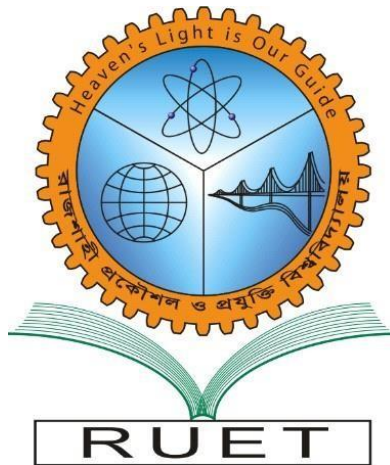# Rajshahi University of Engineering& Technology

Department of Electrical & Computer Engineering

Course No: ECE 4124
Course Name: Digital Signal Processing Sessional

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Experiment No: 06

Experiment Name:

Study of Z-Transformation & Plotting of Zeros-Poles for Anti-Causal Signal

Theory:

An anti-causal signal is a continuous-time signal that equals zero for values of t greater than zero. So basically, there is no signal that goes against cause and effect in a positive way. Likewise, a sequence that occurs at specific times is called an anti-causal sequence if the sequence is equal to zero for values greater than zero.

Code:
```
clc

x= [1 2 3 4];

syms z
y=0;
sz =length(x);
for i=1:sz
   y = y + x(i)*z^(sz-i);
end

disp(y);

zplane([],[]);
title('plot of anti-causal signal');
```
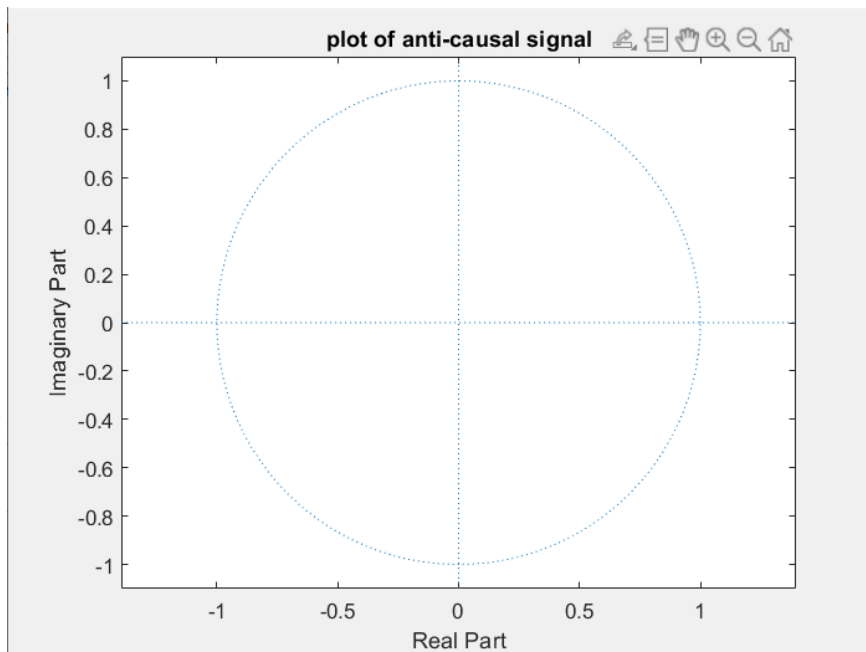
Output

Fig. 1 Output of z-transform of signal

```
z^3 + 2*z^2 + 3*z + 4
```

fx >>

Fig. 2 Plot of zeros-poles for a anti-causal signal

Discussion

From figure 1, we can create a generalized type of signal that goes against the usual cause-and-effect relationship. This equation has one pole that is infinity and no value for zero. And a pole that goes on forever cannot be shown on a drawing. That's why figure 2 was empty and didn't have any zeros or poles drawn in it.

Conclusion

In this experiment, I learned about z-transform, figuring out zeros and poles, and plotting them for a signal that goes backward in time using Matlab.