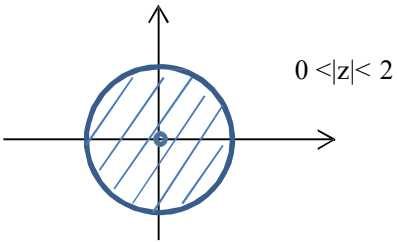
ECE S303

Homework 3

From the textbook: **11.1** and **11.4**

Supplementary Problems:

1. If a sequence x[n] has the following ROC



What can you tell about the sequence?

(i) Is it causal? Why?

(ii) Is it anti-causal? Why?

(iii) Is it non-causal? Why?

(iv) Does X(f) exist? Why?

(v) Is the sequence of finite, infinite or mixed duration? Why?

2. If $X(z) = 2z/((z-2)(z+3))$

(i) Find the causal sequence x[n] that has X(z) as above and show its ROC.

(ii) Find the anti-causal sequence x[n] that has X(z) as above and show its ROC.

(iii) Find the non-causal sequence x[n] that has X(z) as above and show its ROC.

(iv) Find the sequence x[n] for which X(f) exists and find X(f).

3. Find the zeros and poles associated with the sequence x[n] with z-transform

$$X(z) = \frac{2z^{-1}}{(1 - 2z^{-1})(1 + 3z^{-1})}$$

Based on the locations of the poles what can you deduce about the ROC?