CSE 3313 - Homework #5 – z-transforms 1

Find the z-transform polynomial ratio and ROC for the following unit sample sequences:

1. Which of the systems above has a Fourier Transform that exists?

A Fourier Transform exists when the z-transform converges at r=1. This means that the Fourier Transform exists for 1, and 2 but not 3 or 4.

Find the inverse z-transform of the following z-transforms:

, ROC is right sided. Done by inspection.

, ROC is left sided. Done by inspection.

, ROC is right sided. Done by inspection.

1. Which of the systems above has a Fourier Transform that exists?

A Fourier Transform exists when the series converges at . This means that all the questions have a Fourier transform that exists.

Find the poles and zeros of the following z-transform polynomial ratios:

z=0, z=3

z=2, z=4

Find the z-transform and ROC (region of convergence) of the following unit sample sequences:

1. Which of the systems above has a Fourier Transform that exists?