Z Transform

1. one side Transform (unilateral) $X(z) = \sum_{n=0}^{\infty} x[n] z^{-n}$

   two side Transform (bilateral) $X(z) = \sum_{n=-\infty}^{\infty} x[n] z^{-n}$

2. Relationship to Fourier Transform

   Fourier Transform: $\sum_{n=-\infty}^{\infty} x[n] e^{-j\omega n}$

   $\updownarrow z = e^{j\omega}$

   Z Transform: $\sum_{n=-\infty}^{\infty} x[n] z^{-n}$