Signal Processing

Calculate the Z-transform for any discrete signal

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

Cauchy hadamard (Calculate Region of Convergence (ROC)):

$$R = \frac{1}{\limsup_{n \to \infty} |x[n]|^{1/n}}$$

Unit step function:

The unit step function is defined as `u[n]`

$$X(z) = \sum_{n=0}^{\infty} \left(\frac{1}{2}\right)^n z^{-n}$$

neat sum rules

$$\sum_{k=N_1}^{N^2} a^k = \frac{a^{N_1} - a^{N_2+1}}{1-a}$$

$1 + 1$