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2014/7/12

Z-Trans.

$$x(n) = u(n) - u(-n-1)$$

$$X(z) = \sum_{n=-\infty}^{\infty} x(n) z^{-n} = \sum_{n=0}^{\infty} z^{-n} - \sum_{n=-\infty}^{-1} z^{-n}$$

$$= \sum_{n=0}^{\infty} z^{-n} = 1 + z^{-1} + z^{-2} + \dots$$

$$- \sum_{n=1}^{\infty} z^n = - [z + z^2 + z^3 + \dots]$$

ROC<sub>1</sub>  $|z| < 1$

ROC<sub>2</sub>  $|z| > 1$

ROC<sub>1</sub>  $|z| > 1$

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

$$ROC = ROC_1 \cap ROC_2 = \phi$$