

## Properties of ROC

FL RSS  $\rightarrow |z| > 0$

FL LSS  $\rightarrow |z| < \infty$

FL DSS  $\rightarrow 0 < |z| < \infty$

IL RSS  $\rightarrow$  eg.  $a^n u(n) \rightarrow |z| > a$

IL LSS  $\rightarrow$  eg.  $-a^n u(-n-1) \rightarrow |z| < b$

IL RSS (Multipole)  $\rightarrow$  Outside Outermost Pole

IL LSS (Multipole)  $\rightarrow$  Inside innermost Pole

IL DSS  $\rightarrow$  eg.  $a^n u(n) + b^n u(-n-1) \rightarrow$  Common Region

ROC does not contain any poles

Stable  $\rightarrow$  ROC includes unit circle

Causal  $\rightarrow$  ROC must be exterior to outermost pole