Summarize the most important points from memory.

Continuous time

Laplace transform

Typically, we use unilateral LT, not bilateral, so we analyze causal signals and systems.

For causal signals and systems, the ROC is of the form , where is the most positive pole. For FT to (formally) exist, the ROC must contain the axis, which means that all poles must be in the LHP. This is the same condition as being absolutely integrable (aka being in L1 space). For a system, this also means the system is BIBO stable.

For real signals and systems, poles are real or in complex conjugate pairs.

FT in the limit

Is LTI system required for all of these properties?

Can all LTI systems be described by LCCDE?

Poles and zeros and frequency response

Real signal/system = only real poles or complex conjugate poles

For real coefficients, poles and zeros are either real or occur in complex conjugate pairs.

Residues for complex conjugate poles must be complex conjugates.

LCC differential equations

With initial conditions

PSD vs. ESD