Properties

Scaling & Shifting
Convolution / Deconvolution

System Properties
Memoryless, linear, time-invariant, causal, stable

LTI: complex exponentials are eigenfunctions!
Impulse response
Frequency response $e^{j\omega} \rightarrow H(j\omega)e^{j\omega}$

DTFS, CTFS, DTFT, CTFT
- Properties
- Parseval's
- Pade plots
Implementation of complex filters

Basic Sampling

Sampling
Aliasing $\rightarrow$ why?
Nyquist rate $\rightarrow$ why?
Up/Downsampling + effects in time & frequency
Zero order hold
First order hold
Discrete time processing of CT signals

Modulation
- AM
- FM
- PM
- PAM
Laplace, Z-transforms
regions of convergence
  - right sided, left sided, two sided,
  - causality, stability, \( \mathcal{Z} \)-existence,
  - etc

properties
  - initial, final, value theorems
pole-zero plots
geometric evaluation of \( \mathcal{Z} \)
differential/difference eq's
partial fractions

Simple feedback
differential/difference eq's
  or system finals from block diagram
root locus plots

Tentative layout:
  - as long as midterm
    - (short answer + 3 longer)

Tips:
  - know your properties and transforms
  - recognize the basic ones at sight
  - if you do every transform by brute force, you will NOT finish
  - know your basic trig values (unit circle!)