

Instructional Objectives for Roberts Chapter 4 – The Fourier Series

4.1 – Introduction and Goals

Describe the purpose of the Fourier series representations

4.2 The Continuous-time Fourier Series

Write sinusoids in terms of complex exponentials using Euler's identities

Combine complex exponentials into sinusoids using Euler's identities

State the definition of the continuous-time Fourier series

4.3 Calculation of the Continuous-time Fourier Series

Calculate the Fourier series/Harmonic function of a given waveform

Explain the Gibbs phenomenon

4.4 Properties of the Continuous-time Fourier Series

Apply the properties of the Fourier series to simplify Fourier series calculations

4.5 Use of Tables and Properties

Use the tables of the Fourier series properties to simplify Fourier series calculations

4.6 Band-limited Signals

Define band-limited

4.7 Convergence of the Continuous-time Fourier Series

Explain the Gibbs phenomenon

4.8-4.9 The Discrete-time Fourier Series

Describe the uses of the DTFS

Compute the DTFS for a given discrete sequence

Apply the properties of the DTFS to simplify DTFS calculations