Fourier Series Approximations

EE 418/518  Project 1

Due 9/10/03

Turn in a document including your name, date, course name, student number, and project number.

Assignment

1. Go to the signals and systems web site at www.jhu.edu/~signals/fourier2. Using this Java applet, plot a square wave with 1, 5, 15, and 30 coefficients. What is the bandwidth of each if the fundamental frequency of each is 1000 Hz?

2. Do the “suggested exercises” listed at the bottom of the web site. Sketch the signals using the Java applet to assist.

3. Go to the site www.jhu.edu/~signals/listen/music1.html and listen to different waveforms. Explain what you heard.

4. When we transmit data digital data, why do we use more than a signal “pure” tone frequency – or just the fundamental? Demonstrate with a sketch.

5. Answer question 4 but with 3 harmonics instead. (Use the above web sites to help.) Again, sketch an example to explain your answer.