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Fourier Transform Final

Problem 1:

Implementing the FFT radix 2 algorithm using built in matlab fft() function.

myfft32.m is the implementation of the problem. It is meant to be called out with a 32-sample input function x, as in myfft32(x). The result will display in the command window, and plotted in two separate figures for comparison with the actual matlab fft() command.

problem1_test.m will run the function for three inputs.

Problem 2:

The Fourier series coefficients of a periodic, band limited signal x are given by the DFT of one period of samples x, divided by N, where N is the number of samples of x, and the DFT length.

Problem 3:

(i)

Let x(t) = sinc^2(pi*t); then by Lecture 1 triangular pulse example and the symmetry property H(t) <=> h(-f), X(f) = 1-abs(f), abs(f)<1; and 0 elsewhere. Therefore, the Nyquist frequency fc=1.

(ii)

For F values F=2 & F=3, y(y) is indistinguishable from x(n);

Problem 4:

Calculates the product of two arrays, a and b;

a: array of 10,000 9's;

b: array of 10,000 6's;

The output is also an array, presented as big endian, and little endian.