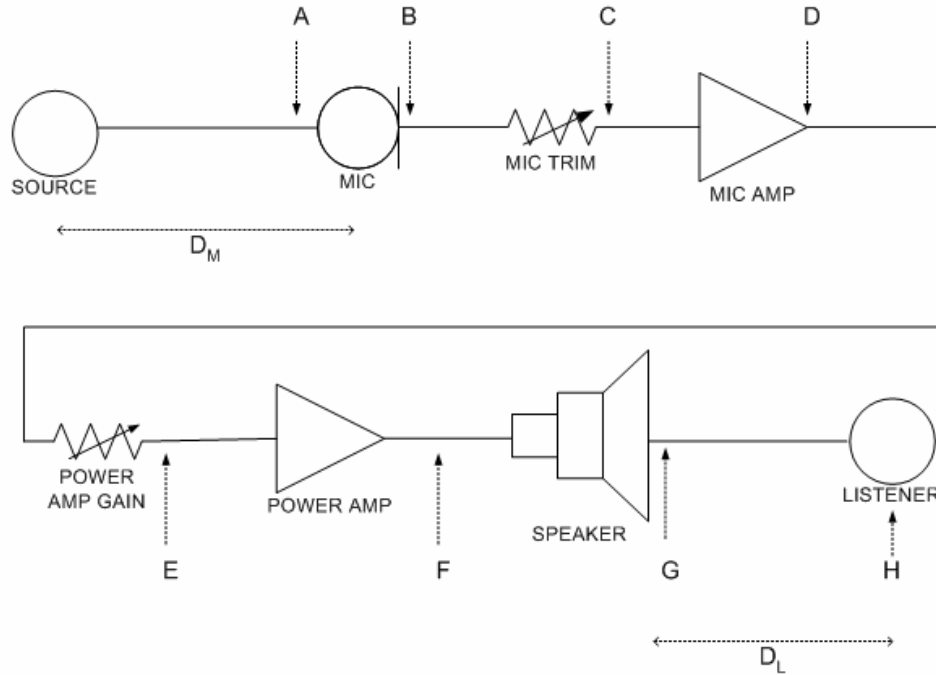


Homework 1
– Due February 28, 2005 –

Problem 1



In the system above compute the intermediate signal levels (in appropriate dB units) for the points A-H when the system parameters are as follows:

Sound Source Level at 4 feet	97 dB SPL	117 dB SPL	72 dB SPL	89 dB SPL
D_M (feet)	14	85	2.5	31
Mic Sensitivity	-54 dBV/1 Pa	-41 dBV/1 Pa	-36 dBV/1 Pa	-60 dBV/1 Pa
Mic Trim	-14 dB	-20 dB	0 dB	-3 dB
Mic Amp Gain	60 dB	47 dB	60 dB	55 dB
Power Amp Trim	0 dB	-5 dB	-12 dB	-1 dB
Power Amp Spec	4V/500W/4 Ω	2V/750W/8 Ω	1.4V/60W/8 Ω	2V/150W/16 Ω
Speaker Impedance	8 Ω	4 Ω	6 Ω	2 Ω
Speaker Sensitivity at 4 feet	1W/82 dB SPL	1W/97 dB SPL	1W/81 dB SPL	1W/92 dB SPL
D_L (feet)	7	51	10	15

Fully justify your answers.

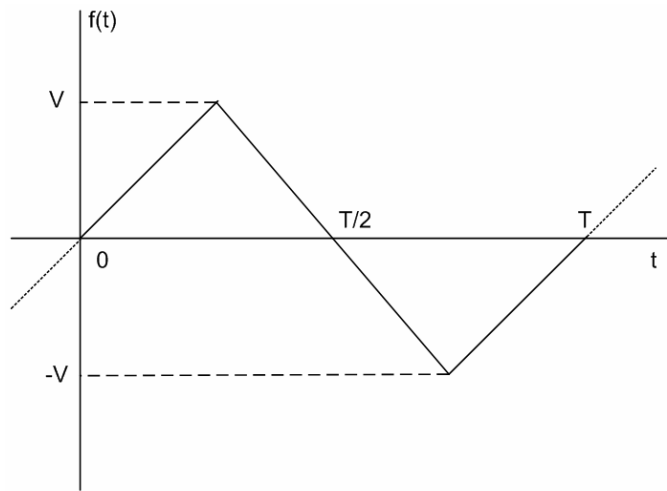
Problem 2

Measure the dimensions of your primary listening room (bedroom, living room, etc.), and compute and tabulate its first 50 modes. Considering its construction (wall materials etc.) and furnishings, comment on its appropriateness as a critical listening room and discuss ways to improve it. Include a sketch of the room. (This can get long – do not write more than half a page!)

Problem 3

Compute the Fourier Series of the following continuous-time periodic waveforms and plot the magnitude of the resulting spectrum. Comment on the structure of the harmonics vs. the symmetries of the signals in time.

a) Triangular



b) Sawtooth (up)

