Homework #3

Not Due

Optional Problems: #3.25, 3.26 4.11†, 4.18 (not e)), 4.26, 4.28, 4.32

4.8
Determine and sketch the spectrum, i.e. amplitude and phase, of an angle-modulated signal assuming that the instantaneous phase deviation is $\phi(t) = \beta \sin(2\pi f_m t)$. Also assume $\beta = 10$, $f_m = 20 Hz$, $f_c = 1000$ Hz.

4.15 An audio signal has a bandwidth of 12 kHz. The maximum value of $|m(t)|$ is 6V. This signal frequency modulates a carrier. Estimate the peak deviation and the bandwidth of the modulator output, assuming that the deviation constant of the modulator is
a) 20 Hz/V
b) 200 Hz/V
c) 2 kHz/V
d) 20 kHz/V

† Note that for parts (a) and (b), it should be "Determine", not "Sketch".

Matlab Problems:

I have moved the Matlab assignment until after the midterm.