24-352 DYNAMIC SYSTEMS & CONTROL

HOMEWORK ASSIGNMENT #4

DUE 1/14/01

PROBLEMS

1. Estimate from the plots shown in Figure 1: the log decrements δ, the damping ratios ζ, the damped frequencies ω_d, and the natural frequencies ω_0 for the systems that have the two responses shown below (refer to the two systems as system Y and system Z).

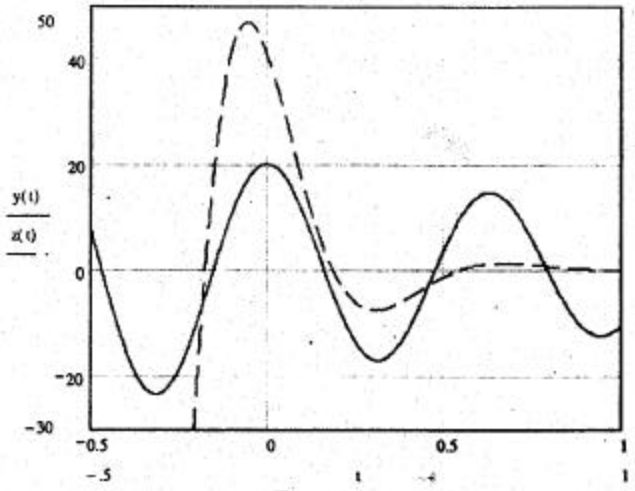

Figure 1

2. Estimate the damping ratio ζ for the system that has the frequency response shown in Figure 2. Estimate the amplitude of the response if the same excitation was applied at a very low excitation frequency (close to zero).
3. Determine the steady-state response of the system shown in Figure 3 for $y(t) = Y_0 \sin(\omega t)$

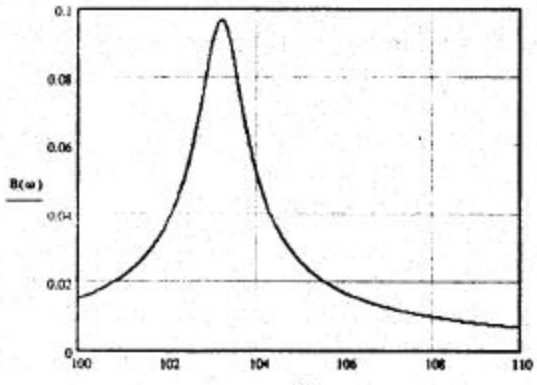

Figure 2

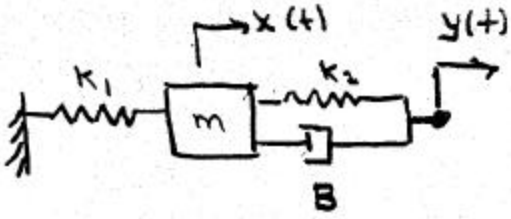

Figure 3