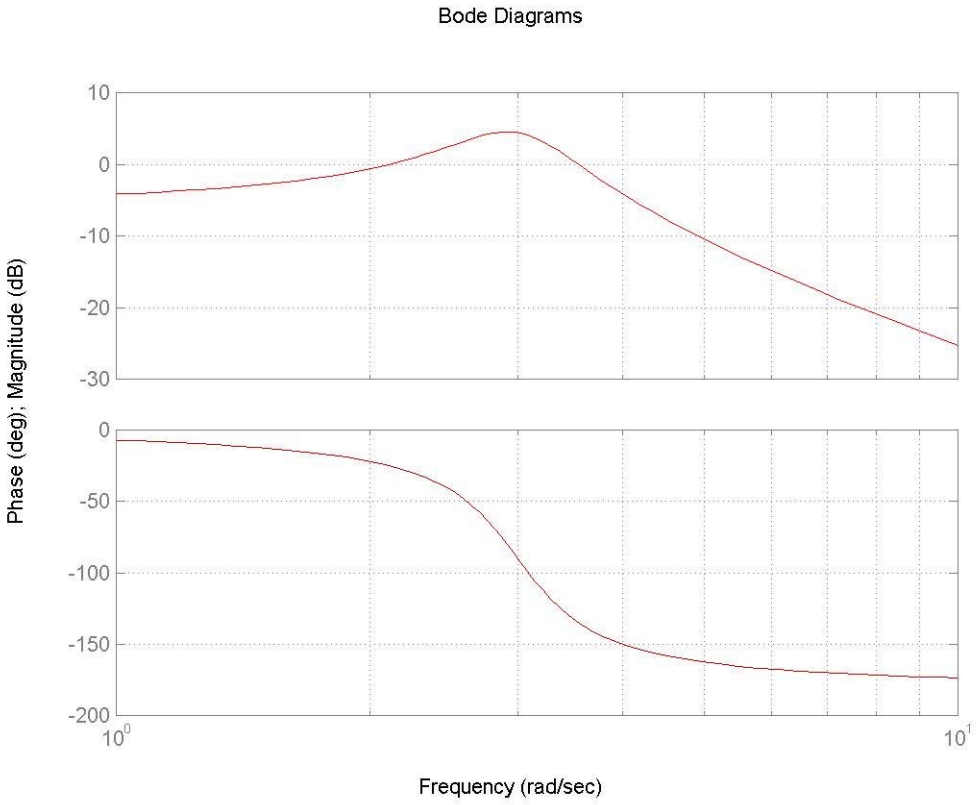
1) Answer the following questions for the Bode plots
   a) Estimate the system transfer function
   b) What is the output if the input is u = 5 * sin (4t)?
   c) At what frequency(ies) (if any) is the output magnitude equal to the input magnitude?
   d) Assume that the input to the system is u = b * sin (w*t) , and that b is a constant while w can vary over the range shown in the Bode plot. At what frequency (if any) is the magnitude of the output the greatest?
   e) At what frequency (if any) is the output magnitude exactly one-tenth the size of the greatest output magnitude?
   f) At what frequency (if any) is the output exactly out of phase with the input?



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2) Plot Bode plots, first by hand, and then using MATLAB, for the systems whose transfer functions are given by

(a) $TF = \dfrac{s+2}{s^2+3s+25}$ (b) $TF = \dfrac{s^2+2s+64}{s^2+30s+6400}$ (c) $TF = \dfrac{s(s+1)}{(s+10)(s^2+30s+6400)}$

Then, answer the questions given in number (1a)-(1h) above for each of the systems.