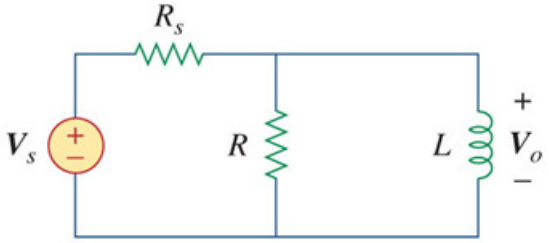
IUPUI ECE 202 Spring 2015:

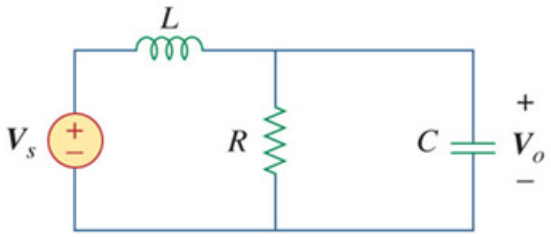
Homework #4 (Due in class: Feb 18, 2015) Name:

1. (Prob. 14.5 in text) For each of the circuits shown below, find the transfer function:

$$\mathbf{H}(s) = \mathbf{V}_o(s) / \mathbf{V}_s(s)$$



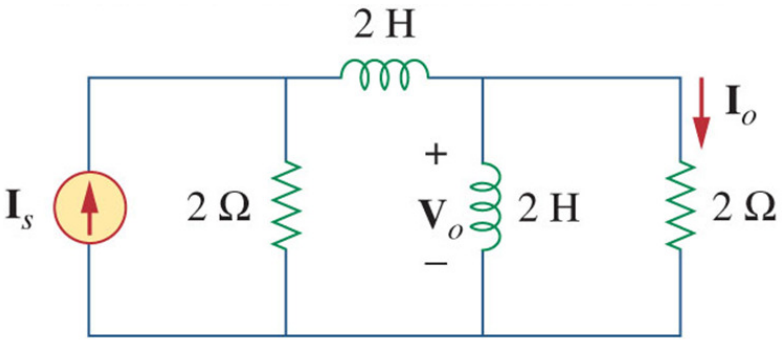
(a)



(b)

2. (Prob. 14.6 from Text) For the circuit shown below, find the transfer function:

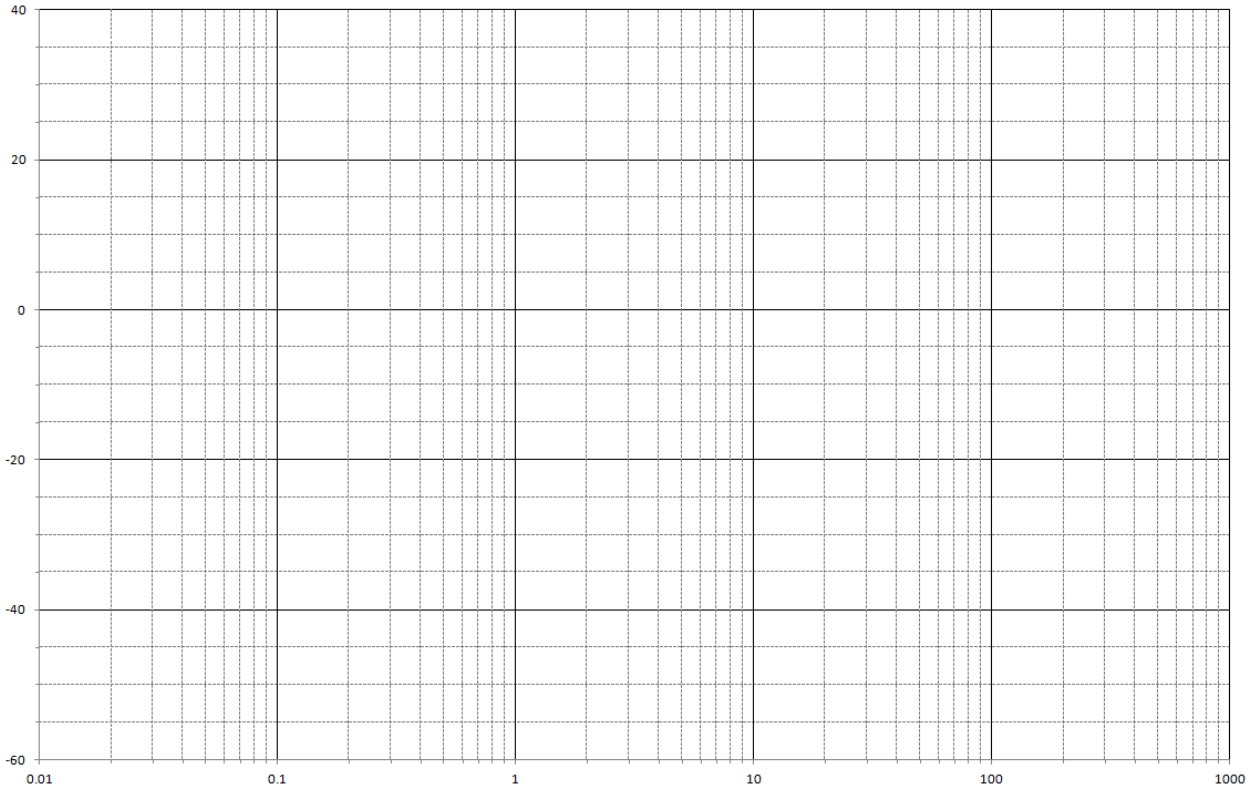
$$\mathbf{H}(s) = \mathbf{I}_o(s) / \mathbf{I}_s(s)$$



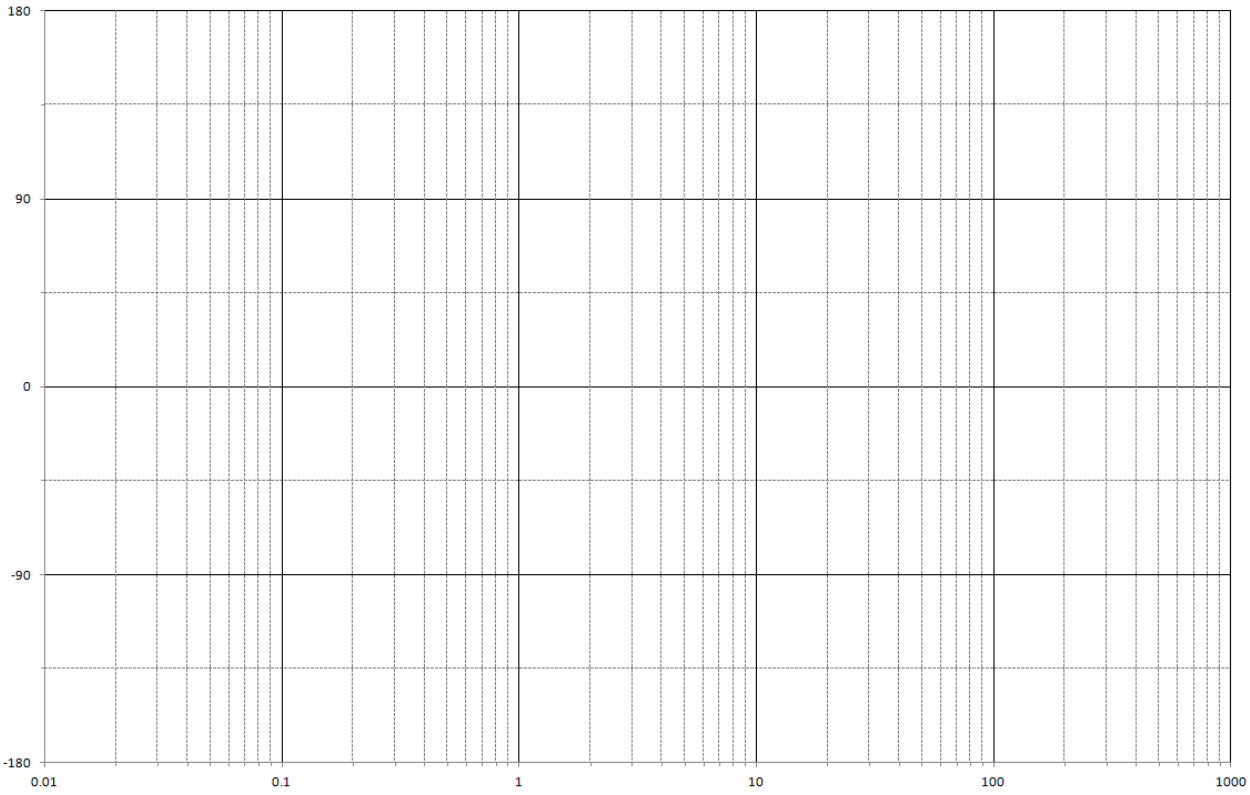
3. (Prob. 14.17 from Text) Sketch the magnitude and phase Bode plots for the following transfer function:

$$G(s) = \frac{s}{(s+2)^2(s+1)}$$

Magnitude Plot



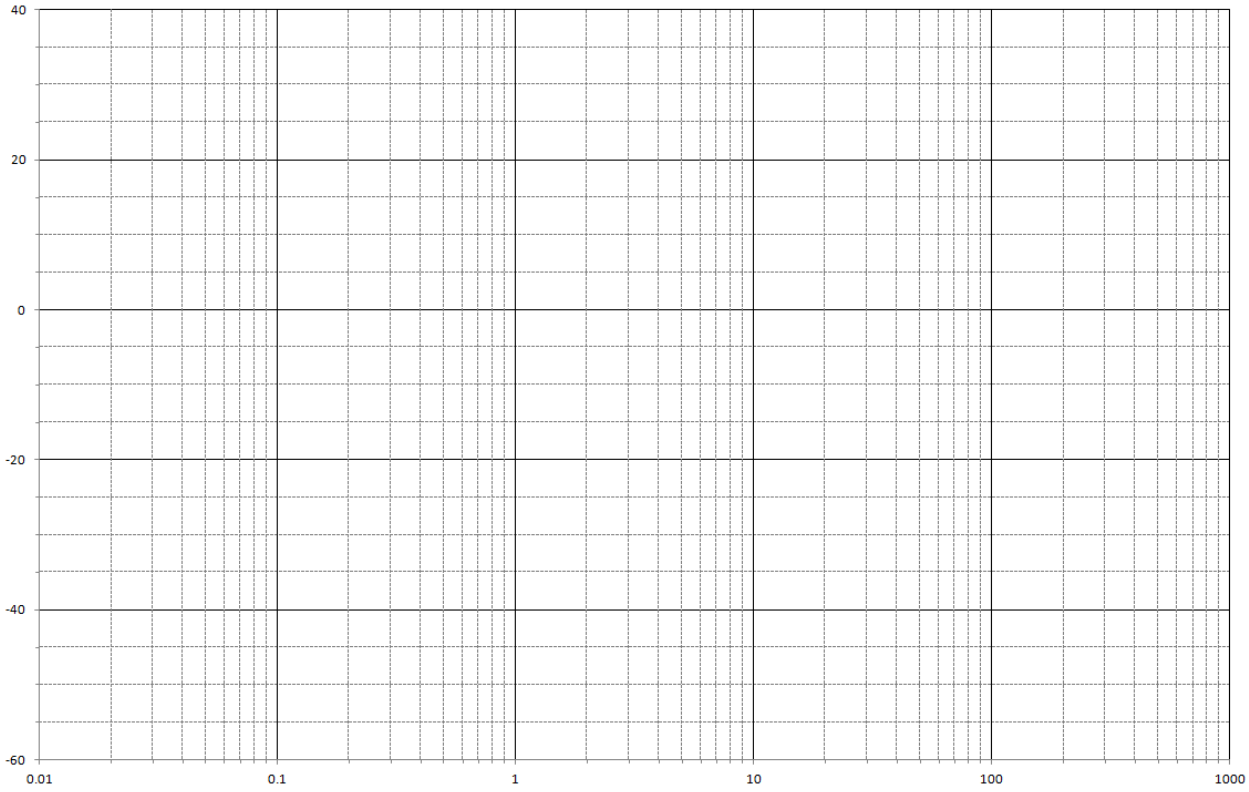
Phase Plot



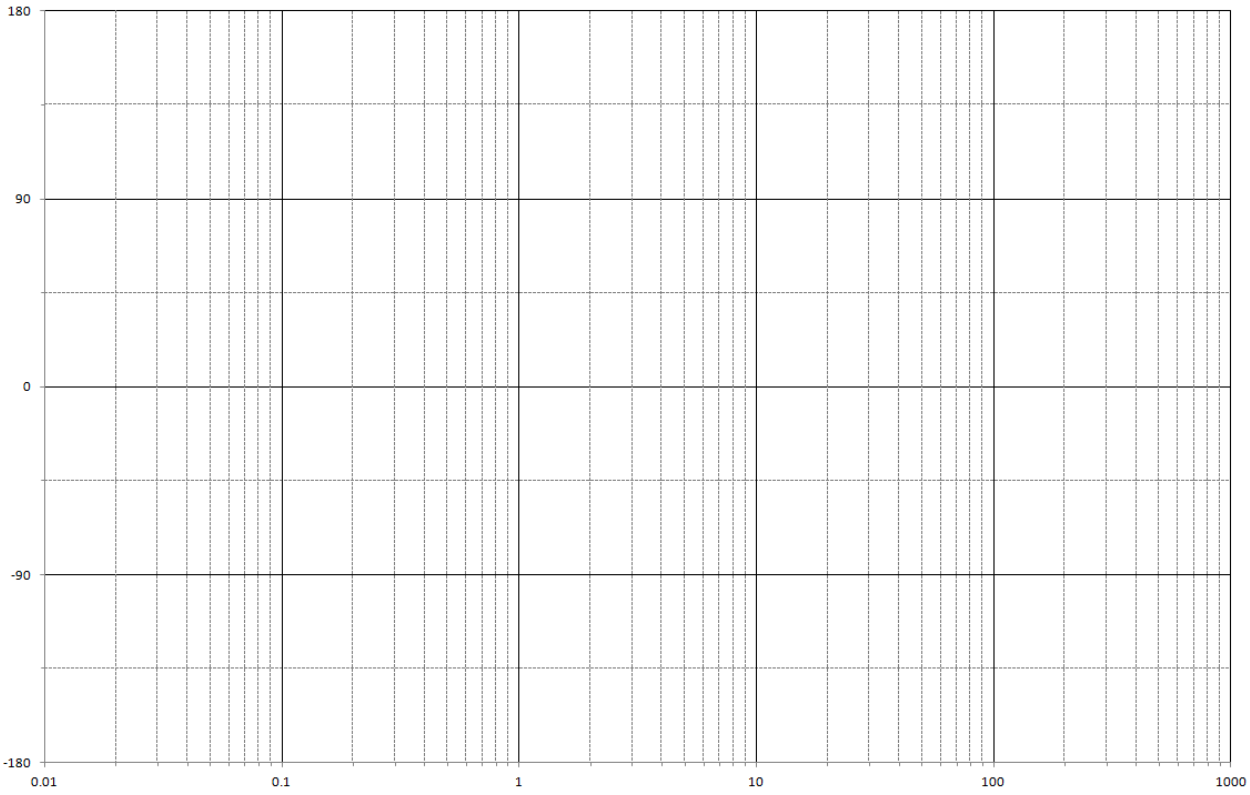
4. (Prob. 14.19 from Text) Sketch the magnitude and phase Bode plots for the following transfer function:

$$H(s) = \frac{80s}{(s+10)(s+20)(s+40)}$$

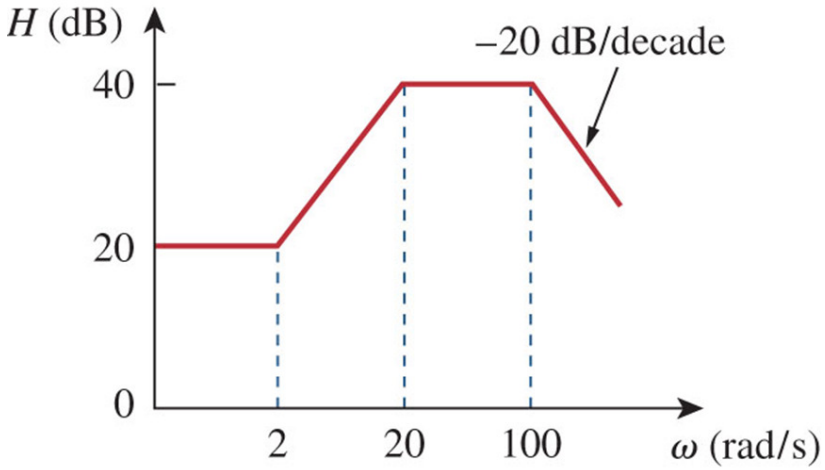
Magnitude Plot



Phase Plot



5. (Prob. 14.22 from Text)
   a. **Part 1**: Find the transfer function H(ω) with the Bode magnitude plot as shown below:



   b. **Part II:** Use MATLAB to generate the Bode plot from your derived transfer function