- a. What is a high pass filter?
- b. What is a low pass filter?
- c. What is the cutoff frequency for a first order (RL or RC) circuit?
- d. What is a Bode magnitude plot?
- e. What is a Bode phase plot?
- f. What is a 3dB point?
- g. What is rolloff?
- h. What does 0dB imply for a transfer function?
- i. What is a bandpass filter? a bandstop filter?
- j. Can we build a bandpass filter or bandstop filter with a first order circuit?
- k. What is gain, K?

1) Plot the Bode plots for the following functions

a)
$$H(s) = \frac{1000}{(s+1000)}$$



Phase Bode Plot for part a)

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b)

 $H(s) = \frac{1000^2}{(s+1000)^2}$

Phase Bode Plot for part b)

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c)
$$H(s) = 10 \frac{s^2}{(s+100)(s+10000)}$$

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Phase Bode plot c)

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2) Bode plot-multiple stages



a. Draw the above circuit as a three stage network. Indicate the transfer function for each stage. *The black boxes above are already there with transfer function lables H1(s) H2(s) and H3(s).*

b. Determine the transfer function, H(s)=Vout(s)/Vin(s) for the circuit

c. What is the gain of the circuit?

d. What are the poles and zeros?

e. Sketch an approximate Bode (dB-log) plot of the magnitude

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f. Sketch an approximate Bode (phase-log) plot of the phase.

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