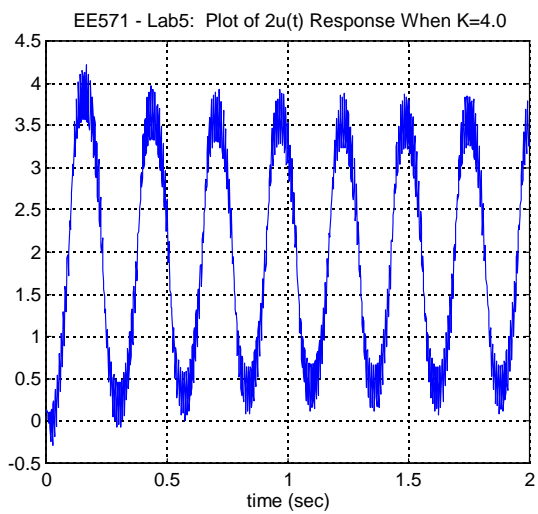
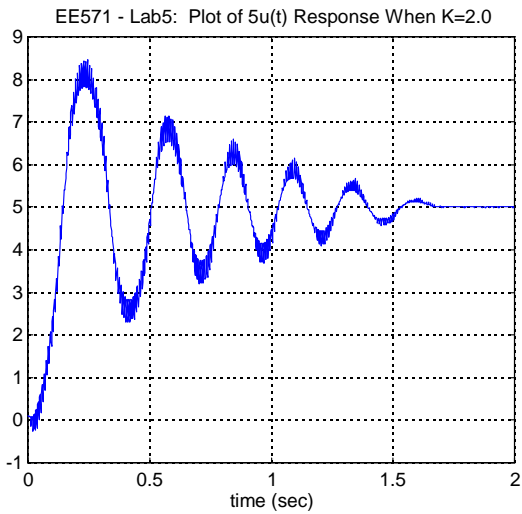
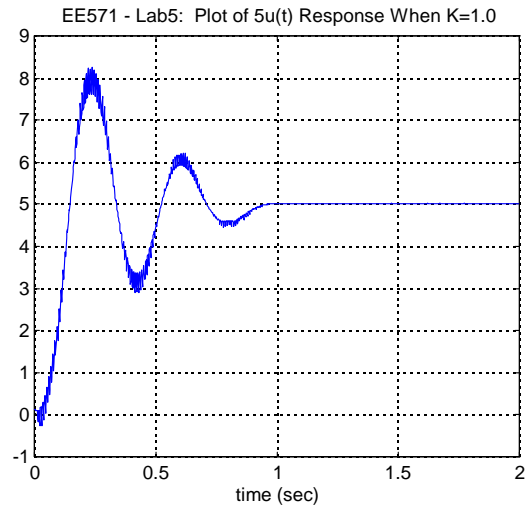
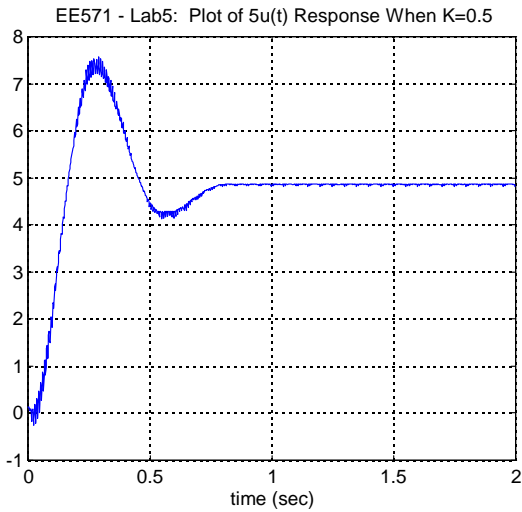
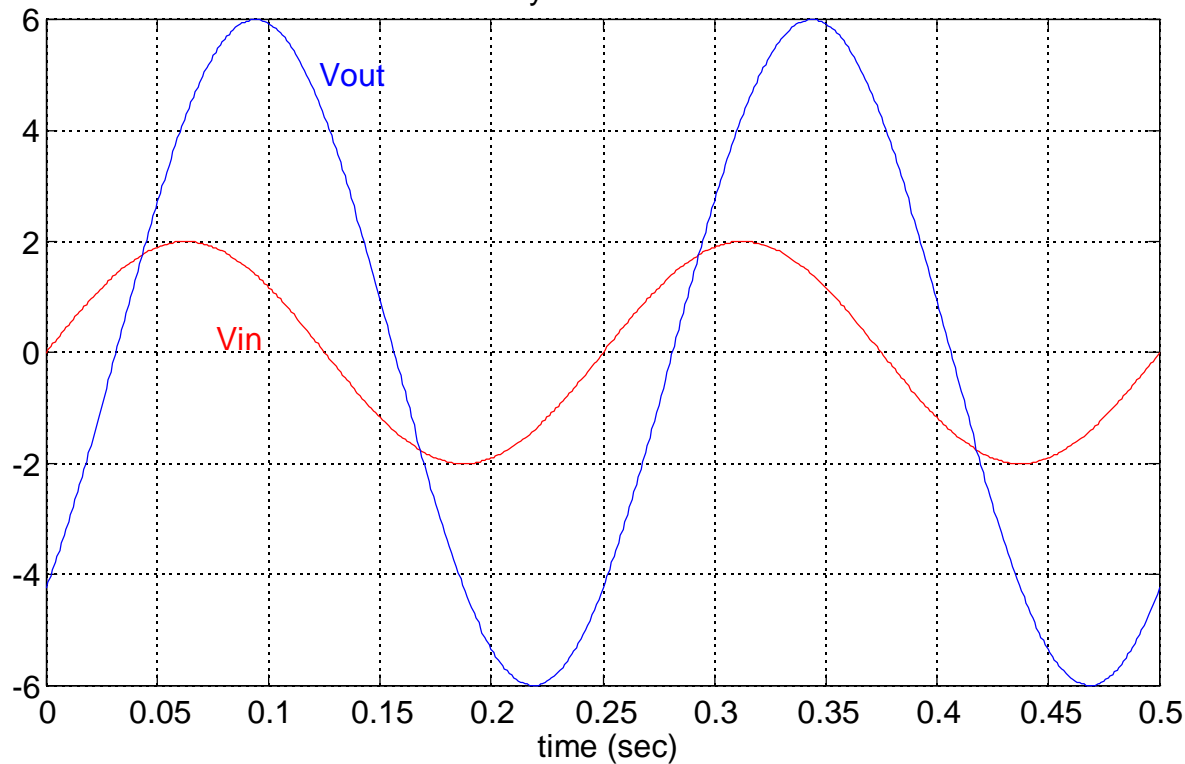


0 Go Back and do part I for Lab 5:



1. a) Realize the following compensators using op-amps, 1  $\mu\text{F}$  capacitors, and resistors (see if you can minimize the number of op-amps you need!):
  - i)  $G_C(s) = 10(s+8)/(s+25)$  ii)  $G_{\text{pid}}(s) = 4 + 0.1s + 5/s$
- b) Use semi-log paper to construct the Bode Plots (both magnitude and phase) for the following transfer functions:
  - i)  $G(s) = 10(s+1)/[s^2(s/10 + 1)]$  ii)  $G(s) = 10(s+1)/[s(s/10+1)^2]$  iii)  $G(s) = 10(s+1)/[s((s/10)^2+1)]$
- c) Sketch the Bode Plot of  $G(s) = 10/[(s/10)^2 + (s/10) + 1]$
- d) Find  $\omega, |G(j\omega)|, \angle G(j\omega)$  given that  $G(s) = V_{\text{out}}(s)/V_{\text{in}}(s)$  and the following sinusoidal steady-state plot:

EE571 - HW#25: Steady-State Sinusoidal Plot of  $V_{in}$  and  $V_{out}$



- e) Find  $G(s)$  from the following Bode Magnitude plot of  $G(j\omega)$  (hint: work backwards and see if you can match asymptotes at the various slopes of  $-20\text{dB/dec}$ ,  $-40\text{dB/dec}$ , etc.)

EE571 - HW#25: Magnitude of  $G(j\omega)$  in dB

