

ECE 202 HW #2
Spring 2007
Due 01/26/07

- Office Hours: MW 3:30-5:00 p.m.
- Read Chapter 8.3 from the book and the lecture notes.

1. [50] Consider the circuit given in question 8.27 in the book.

- a) Find the steady-state voltage $v_x(t)$ by hand.
- b) Analyze the circuit in PSPICE using the “TRAN” mode. Plot $v_x(t)$. What is the amplitude of the output voltage in steady-state? Compute the phase of the output voltage using the graphs and compare with your answer in part a).
- c) Perform an “AC” analysis of the circuit with PSPICE. Plot the output voltage magnitude and phase over the frequency range 1Hz and 500Hz. What are the amplitude and phase of the output voltage at 397.88Hz?

2. [50] Consider the following circuit with $v_1(t) = 400 \cos(5000t + 36.87^\circ)V$ and $v_2(t) = 128 \sin(5000t)V$.

- a) Find the steady-state expression for $v_o(t)$ using the superposition principle.
- b) Analyze this circuit in PSPICE using the “TRAN” mode. Plot $v_o(t)$. What is the amplitude of the output voltage in steady-state? Compute the phase of the output voltage using the graphs and compare with your answer in part a).
- c) Perform an “AC” analysis of the circuit with PSPICE. Plot the output voltage magnitude and phase over the frequency range 1Hz and 1000Hz. What are the amplitude and phase of the output voltage at 795.77Hz?

