Name

Section: ____ Version A

Midterm — EE 233 Spring 2008

The test is closed book, with one sheet of notes and calculators allowed. Show all work. Be sure to state all assumptions made and **check** them when possible. The number of points per problem are indicated in parentheses. Total of 100 points in 3 problems on 3 pages.

1. Calculate $v_1(t)$ in the circuit below using sinusoidal steady-state analysis. Component values are $v_s = 20 \cos(5000 t - 90^\circ)$, $R_1 = 5 \Omega$, $R_2 = 2 \Omega$, L = 0.2 mH, and $C = 40 \,\mu\text{F}$. (30)



2. (a) Calculate the total complex power (include units) delivered by the current source. [Hint: You might want to use admittances.] (25)



(b) Based on your analysis in part (a), could the power delivered to the load be increased by adding additional capacitance in parallel with the load? Explain. (5)

3. (a) Determine $V_c(s)$ for following circuit with $v_s(t) = 2t u(t)$. Include initial conditions for the capacitor, but assume that the inductor has no stored energy at $t = 0^-$. (25)



(b) Find the inverse Laplace transform [f(t)] of $F(s) = \frac{3s+4}{s^2+2s+2}$. (15)

End Of Exam