Review the relevant material in the text, chapter 8.

Problems Due: Friday, September 1.

1. (20 points, half for the Matlab portion) Text, problem 8.27, however, use the parameter values \( L = 0.5 \) H, \( C = 200 \mu F \), and \( R = 20 \) \( \Omega \). Solve the problem (find \( i_L(t) \) by hand calculation). Then, define state variables, determine the required initial conditions, and use Matlab to solve for the inductor voltage, \( v_L(t) \), as well as the inductor current. Plot the Matlab results, carefully labeling the curves in the plots (and verify they match your hand-calculation solution).

2. (20 points, half for the Matlab portion) Text, problems 8.31, however, use parameter values \( L = \left( \frac{1}{15} \right) \) H, \( C = 31.25 \mu F \), and \( R = 20 \) \( \Omega \). Solve the problem (find \( i_0(t) \)) by hand calculation. Then, define state variables, determine the required initial conditions, and use Matlab to solve for the inductor current as well as the inductor voltage, \( v_L(t) \), for \( t \geq 0 \). Plot the Matlab results (and verify they match your hand-calculation solution).