

ECE 360
HOMEWORK #4
Due October 9, 2002

- Read 11.5-11.6 from Ambardar.
 - Office Hours: M,T 9:30-11:30 am, no office hours on Friday this week
1. 11.5 b, c, d, from Ambardar.
 2. 11.8 d, from Ambardar. (You can use MATLAB to verify your results.)
 3. 11.13 a, from Ambardar.
 4. 11.28 for Circuit 4 from Ambardar.
 5. The input $x_1(t) = e^{-t}u(t)$ is applied to a LTI system with nonzero initial conditions $y(0), y'(0)$. The resulting response is $y_1(t) = (3t + 2 - e^{-t})u(t)$. A second input $x_2(t) = e^{-2t}u(t)$ is applied to the system with the same initial conditions $y(0), y'(0)$. The resulting response is $y_2(t) = (2t + 2 - e^{-2t})u(t)$. Compute $y(0), y'(0)$ and the impulse response $h(t)$ of the system.
 6. A LTI system has impulse response $h(t) = [e^{-t} \cos(2t - 45^\circ)u(t) - tu(t)]$. Determine the input/output differential equation of the system.