EE331 — Homework #5 / Due Friday, Feb. 19, 2020 **at the beginning of class**

Note that you need to show your work on a Smith chart for the Smith chart problems (1 and 2), and you need to turn the charts in as part of your homework. A Smith chart is available on our homework web page.

1. Redo Example #10 but with an antenna impedance of $Z_L = 50 - j25\ \Omega$.

2. A shunt stub tuner of length $l = 0.12\lambda$ is used to match a 60-Ω lossless line to a load. If the stub is located at $d = 0.3\lambda$ from the load, calculate the load *impedance* Z_L. Note the italics!

3. (a) Redo part (a) of Example #11 but rather than finding the voltage at the load, find and sketch the voltage at the midpoint of the line V_M. You can use the bounce diagram from the example. (b) Using the same TL circuit of Example #11, let the DC source be -10 V (everything else is the same) and flip the switch at $t = 1\ \mu$s. Use a bounce diagram to sketch the voltage at the load as a function of time for $0 \leq t \leq 10\ \mu$s. (c) Combine (i.e., add) the results from part (a) of Example #11 and part (b) of this problem to find the transient behavior of a 1-μs pulse.