Problem Set No. 3

Problem Number one ) Impedance Calculation
Problem 2.23 of Ulaby (Ed. 5)

Problem Number two ) Preparation for Lab 3
a) Replace the load on one arm of Problem 2.23 with a short. Trace out the trajectory of the input impedance on a Smith chart as the length of the shorted line changes.
b) Adjust the lengths of the now shorted arm and the remaining antenna arm so that matching is obtained.

Problem Number three ) Impedance Transformation
a) Problem 2.24
b) Problem 2.25

Problem Number four ) Parameter Determination
Problem 2.26

Problem Number five ) Power on a Transmission Line
a) Problem 2.32
b) Problem 2.34

Problem Number six ) Bounce Diagram
Problem 2.55

Problem Number seven ) LTSpice
a) Simulate a $Z_o = 50\Omega$ line with a 20 nsec delay terminated with a .05 nF capacitor. Use a pulse excitation of 5 nsec duration and have the results plotted over 200 nsec. The source resistance is zero Ohms. Plot the capacitor voltage.
b) Derive the first pulse analytically and compare with the simulation