Components:

Problem 1. A 200 ohm resistor is soldered to ground from the end of a section of 50 ohm microstrip transmission line. 4 mm toward the generator, a 4 nH inductor is soldered from the transmission line to ground. 4 mm from the inductor, a 2 pF capacitor is soldered in series with the transmission line. What is the impedance at 2 GHz looking into the transmission line at the edge of the circuit board, 1 cm from the capacitor?
Problem 2. A mystery transistor has $S_{11} = 0.68 \ e^{j168^\circ}$. Use the Smith Chart to perform an approximate match to this input at 144 MHz. Use the suggested component layout and discuss the errors due to the length of the microstrip transmission lines.