

Example Exam question on Smith Charts (normally these were midterm I):

ECE 3300 Midterm I September 28, 2005

1.(40 points) A 3V sine wave generator with an internal impedance of 25Ω is connected to a 50Ω transmission line that is 3.5 wavelengths long. The transmission line is connected to a microwave circuit (this is a complex load). A standing wave with VSWR = 3.0 is formed on the line. The first voltage maxima of this standing wave is located 0.2 wavelengths from the load, and the first voltage minima is more than 0.2 wavelengths from the load.

(a) Find the load impedance

(b) Find the input impedance

(c) Find the maximum voltage of the standing wave. (SHORTCUT: You can receive all but 3 points on this part if you just write the equations and include numerical values for all variables in this equation.)