EE381 **Homework 2 Supplemental**

Due Date: 02/03 At the beginning of class

This problem will exercise your ability to use Matlab and/or Mathematica, Python, C++… I would recommend Matlab, since most/all professional engineers know this program and use it on a regular basis.

The Problem

The approach taken by the book to perform the inverse problem, namely solving for $s = w/h$ if you know Z_o, is a bit silly. I, along with most other techy people, would immediately go to Matlab and spend ~5 minutes writing a simple code to numerically solve for *s* for a given Z_o. This is especially true since it appears that *s* is monotonically decreasing as Z_o increases. Please write this code and test it for the example we went over in class, namely Example 2-2 of 7th edition. I would imagine that the code will not be more than perhaps 20 lines.

Hint: You will be using equations 2.37-2.40 (i.e., Z_o as a function of *s*) rather than 2.42-2.43 (i.e, *s* as a function of Z_o). Start by creating an array of *s* values, from 0 to say 100. Then work through the equations for *x*, *y*, and *t*, finding their corresponding values (i.e., corresponding to the *s* values). Then find the array of Z_o values. Once you have these corresponding Z_o values, you can implement one of a couple possible approaches for Matlab to return the appropriate *s* value. Some ways are more elegant/efficient than others—one way will involve only one line of code.