**Problem #1:**

Write and use a VBA Function to calculate the temperature profile, *T(z)*, along the fin pictured, from 0 ≤ *z* ≤ *L*. Plot the temperature profile for three values of the convective heat transfer coefficient, *h*: the value given above, and twice and three times that value. Choose an appropriate distance, *z*, between your *z* values to get a smooth plot.

***Question*:** How much does increasing *h* to two and three times its original value reduce the temperature at the end of the fin by? Also copy & paste the VBA code of your Function into your Word document.

**Answer:** Increasing h to two times its original value increases the temperature at the end of the fine by **26.1°**. Increasing h to three times its original value increases the temperature at the end of the fine by **26.7°.**

Function Temp(l, b, w, k, Ta, h, Tw, z)

' Homework Problem # 1

' Calculates the Difference between the temperatures

Tdif = Tw - Ta

' Solves for N in the function

N = ((h \* l ^ 2) / (k \* b)) ^ (-1 / 2)

' Solves for the numerator of the fraction

Top = WorksheetFunction.Cosh(N \* (1 - (z / l)))

' Solves for the Denomanator of the fraction

Bottom = WorksheetFunction.Cosh(N)

Temp = Ta + Tdif \* (Top / Bottom)

End Function

**Problem #2:**

Write a VBA Sub procedure to read the coefficients of a quadratic equation, *y* = *ax2* + *bx* + *c*, from the worksheet. It should calculate and write the values of the roots of the quadratic equation to the worksheet in a 2x2 matrix – where the each row is one of the two roots, *x1* & *x2*, and the first column is the real part of the root and the second column is the imaginary part of the root.

***Question*:** What are the roots of *y* = *2x2* – *6x* + *5*? Also copy and paste the VBA code of your Sub procedure into your Word document.

The roots of y = 2x^2 – 6x +5 are 1.5 + 0.5i and 1.5 – 0.5i