PROJECT 1

ME 353 Heat Transfer 1
Department of Mechanical Engineering
University of Waterloo

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You are required to work on Problem 3.131 of the 4th Edition of Fundamentals of Heat and Mass Transfer by F.P. Incropera and D.P. DeWitt.

You are requested to use the circular annular fin temperature $\theta(r)$ and heat flow rate q_f solutions given on page 124 of the text. Since these analytic solutions contain the modified Bessel functions: $I_0(\cdot), I_1(\cdot), K_0(\cdot), K_1(\cdot)$, you must use a Computer Algebra System (CAS) such as *Maple, Matlab, Mathcad, Mathematica, etc.* Certain spread sheets such as *Excel* are now able to handle these special functions.

I recommend the use of *Maple V Release 4* for this project. *Maple V R4* is available on the Watstar system.

In *Maple* the modified Bessel functions are: `BesselI(0, x)`, `BesselI(1, x)`, `BesselK(0, x)`, `BesselK(1, x)`.

The attached *Maple* Worksheet illustrates how to call these functions and how to evaluate them.

The Due Date of Project 1 is 11:30 AM, Wednesday, October 8.