

```

:Lbl Title
:J0=sum seq(((1)^N)/(N!)^2*((λ/2)^(2*N)),N,0,5,1)
:J1=sum seq(((1)^N)/((N+1)!N!)*((λ/2)^(2*N+1)),N,0,5,1)
:CILCD
:Menu(1,"Cylinder",Bcylin,2,"Plane",BPlane,3,"Sphere",Bsphere,5,"Exit",EndHere)
:
:Lbl Bcylin
:CILCD
:Radian
:Input "Biot= ",Bi
:Solver(Bi=λ*(J1/J0), λ,1,{0,3})
:A1=(2/λ)(J1/(J0^2+J1^2))
:Fix 4
:CILCD
:Disp "Biot Cylinder"
:Outpt(3,1,"Biot")
:Outpt(3,12,Bi)
:Outpt(4,1," λ")
:Outpt(4,12, λ)
:Outpt(5,1,"A1")
:Outpt(5,12,A1)
:Pause
:Goto Title
:
:Lbl BPlane
:CILCD
:Radian
:Input "Biot= ",Bi
:Solver(Bi=λ*tan λ,λ,0)
:A1=(4*sin λ)/(2λ+sin 2λ)
:Fix 4
:CILCD
:Disp "Biot Plane"
:Outpt(3,1,"Biot")
:Outpt(3,12,Bi)
:Outpt(4,1," λ")
:Outpt(4,12, λ)
:Outpt(5,1,"A1")
:Outpt(5,12,A1)
:Pause
:Goto Title
:
:Lbl Bsphere
:CILCD
:Radian
:Input "Biot= ",Bi
:Solver(Bi=1-λ*(tan λ)^-1, λ,0)
:A1=4(sin λ-(λ cos λ))/(2λ-sin 2λ)
:Fix 4
:CILCD
:Disp "Biot Sphere"
:Outpt(3,1,"Biot")
:Outpt(3,12,Bi)
:Outpt(4,1," λ")
:Outpt(4,12, λ)
:Outpt(5,1,"A1")
:Outpt(5,12,A1)
:Pause
:Goto Title
:
:Lbl EndHere
:CILCD

```

Description

The formulas may be found in Incropera & DeWitt Introduction to Heat Transfer Third Edition pg 226 & 229. J_1 and J_0 are Bessel functions of the first kind and are initialized at the beginning of the program for use later. The Bessel function formula may be found in Differential Equations by Guterman & Nitecki pg 550 & 551.