Problem 1.

Given,

To find the corresponding eigenvalues

------ 1

Substituting in equation 1, we get

Expanding equation by given

------------2

Identities:

Using identities on equation 2, we get

----------------3

Dividing by on both sides of equation 3, we get

Problem 2.

For Copper bar, with

When N = 100, The maximum temperature is 155.71 C.

When N = 250, The maximum temperature is 159.02 C.

For AISI 1010 carbon steel with

When N = 100, The maximum temperature is 919.36 C.

When N = 250, The maximum temperature is 938.90 C.