AE331 HEAT TRANSFER
Online Quiz, No 2
November 11, 2020
(open notes and books)

Rules for the quiz

1. Your camera and microphone should be open during the quiz (you can reduce your speaker's volume if the voice is bothering you but you should not reduce the volume of your microphone)

2. You should not communicate with anybody during the quiz.

3. You should sit in front of your computer where the assistants can clearly see you even if you finish the quiz earlier.

4. You should be alone during the quiz.

5. Please sign the following statements and upload this page with your solution papers.

Question
Duration: 15 min for solution + 10 min for uploading

Assume that you have a plain wall which has a thickness of a.b m and the conductivity coefficient of ba W/mK. The left surface of the wall is insulated. The right surface of the wall is exposed a fluid which has a free stream temperature of ab K and the convective heat transfer coefficient of ab0 W/m²K. Inside the wall, the distribution of heat source is given as:

$$k = ae^{-bx}$$

a) Calculate the temperature distribution inside the wall.
b) Calculate the heat flux from the left and right surfaces.

Where "a" and "b" are the symbols that represent the last two digits of your id number. For example, if your id number is 7134251 = 71342ab, then a=5, b=1. (If any of these symbols has a zero value, you should replace the value in the third digit of your id number)