AE331 HEAT TRANSFER
Online Quiz, No 10
January 13, 2021
(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.

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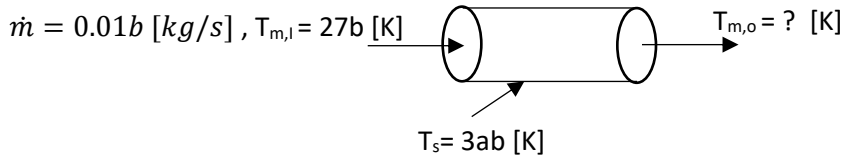
I affirm that all the work done on this quiz is my own; have obeyed the rules indicated above and I have not given or received any help during this quiz. I understand that any indication of violation of this word of honor may lead to a zero grade on this quiz and to a disciplinary action.

Name: ID number: Date/Signature:

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

Assume that a cylindrical tube has a dimeter of 0.1b [m]. The length of the tube is 1.b [m]. The inner surface temperature of the tube is 3ab [K]. Water enters the tube at 27b [K]. The mass flow rate of water is 0.01b [kg/s]. Assume that the thermophysical properties of water are constant. The Prandtl number of water is 7.5. The density of water is 1000 [kg /m^3]. The dynamic viscosity of water is 0.0007 [N.s/m^2]. The specific heat of water is 4200 [J/kg.K]

a) Calculate the average convective heat transfer coefficient
b) Estimate the mean temperature of water leaving the tube.



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 and cause difficulties in the solution, you can replace this value with the third digit of your id number)